

# **Governo do Distrito Federal**

DEPARTAMENTO DE ESTRADAS DE RODAGEM  
DO DISTRITO FEDERAL

Rodovia: DF - 220

Trecho: Km 0 ao Km 15,9

PROJETO DE ENGENHARIA RODOVIÁRIA

**VOLUME 1 – RELATÓRIO DO PROJETO E DOCUMENTOS PARA CONCORRÊNCIA**



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## 1. Introdução

O presente *Volume 1 – Relatório do Projeto e Documentos para Concorrência*, é parte integrante do Projeto Final de Engenharia e está sendo apresentado em conformidade com as instruções particulares do edital.

## 2. Informações Referentes à constituição do Projeto

A Elaboração do projeto é composto dos seguintes volumes:

- Volume 1: Relatório do Projeto, apresentado em formato A4.

O presente volume apresenta uma visão geral do projeto, sua concepção, conclusões finais e indicações de normas a serem seguidas para a implantação das obras e serviços.

- Volume 2: Projeto de Execução, apresentado em forma de desenhos e planilhas no formato A1.

Volume que apresenta desenhos em planta e perfil contemplando todos os elementos geométricos horizontais e verticais, projeto de drenagem superficial e de talvegue, sinalização horizontal e vertical e demais itens de interesse do projeto.

- Volume 3 : Memória Justificativa em formato A4

Volume que apresenta justificativa das soluções revistas e/ou alteradas, enfocando aspectos técnicos baseados na classe da rodovia.

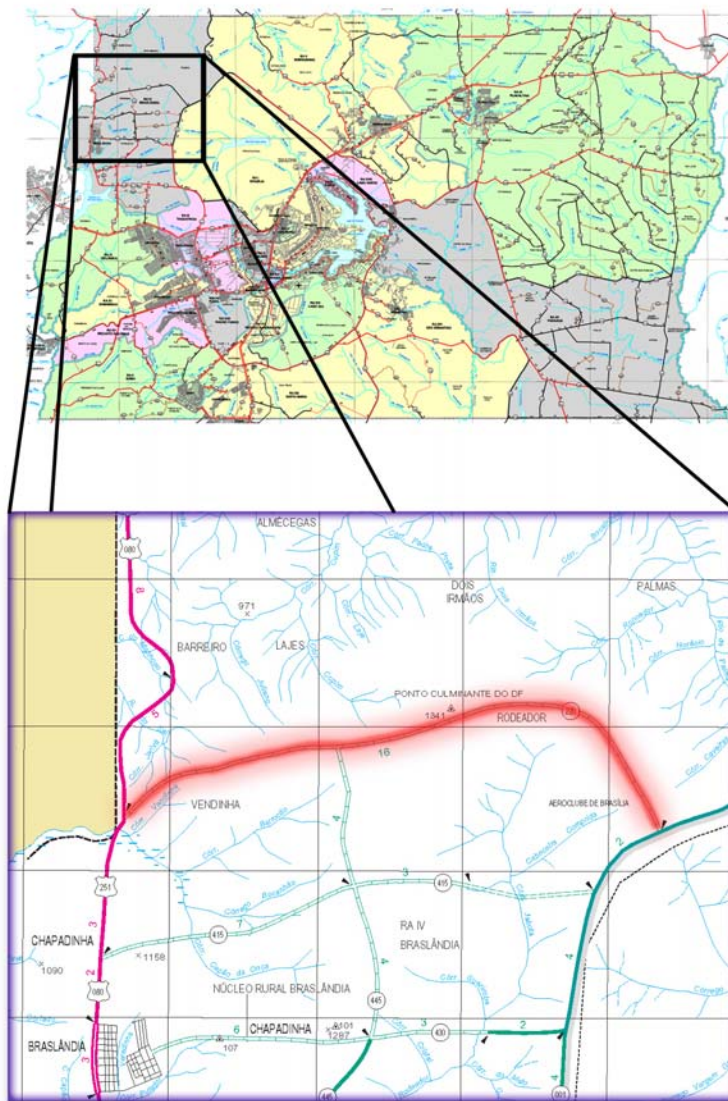
- Anexo 3A: Estudos Geotécnicos

O anexo de Estudos Geotécnicos contém os boletins de sondagens, ensaios de materiais coletados, os quadros resumo dos ensaios de sub-leito e jazidas..

- Anexo 3B – Nota de Serviço e Cálculo de Volumes

Este volume apresenta as notas de serviço descritivas do pavimento acabado e de sub-leito apresentados em formato A4 com seções desenhadas e descritivas respectivamente, com os quantitativos de volumes de corte e aterro.

## 2 – MAPA DE LOCALIZAÇÃO







### **3.1 – Estudos Topográficos**

### 3.1.1 - Objeto

O Objeto do presente trabalho é a implantação da poligonal de apoio para o levantamento planialtimétrico cadastral da estrada DF-220, no trecho do Km 0 ao Km 15,90.

### 3.1.2 – Origem

O serviço topográfico teve como origem o vértice BRAZ do IBGE, pertencente à RBMC (Rede Brasileira de Monitoramento Contínuo), SIRGAS e Rede IGS, cujas coordenadas estão abaixo:

UTM – SAD-69		GEO –SAD-69	
Norte:	8.234.791,574	Latitude:	15°56'49,2964" S
Este:	191.946,760	Longitude:	47°52'38,7376" W
H:	1.118,6531	H:	1.118,6531

De acordo com instruções do Órgão, o plano topográfico local teve como origem o ponto GPS01 e suas coordenadas UTM-SAD69 foram adotadas como topográficas locais:

UTM – SAD-69		TOPO	
Norte:	8.271.673,5870	Xo:	800.520,0337
Este:	800.520,0337	Yo:	8.271.673,5870
		Altitude Média:	1.220m

### 3.1.3 – Descrição

O serviço topográfico iniciou-se com o transporte de coordenadas da origem acima descrita até os trechos em questão. Durante o rastreamento dos pontos de transporte, foram sendo materializados os marcos de apoio geodésicos do trecho, totalizando 8 pontos. Estes marcos foram distribuídos em pares distantes 5 Km em média entre si, e entre estes foram executadas as poligonais auxiliares, listadas posteriormente

A seguir executou-se o rastreamento de GPS destes marcos de apoio geodésico para execução das poligonais auxiliares através de estações totais, além de nivelamento e contranivelamento dos marcos.

O processamento dos dados colhidos pelo GPS foi feito através do software GPSurvey, versão 2.35a (última disponível). Essas coordenadas foram ajustadas através do software TRIMNET Plus, versão 92.11c (também a última disponível). As coordenadas obtidas foram transformadas para UTM através do software GPTrans, e então exportados para o software Sistema Topograph 98SE, versão 3.03, e transformados em topográficas.

As cotas do trecho foram obtidas através de nivelamento e contra-nivelamento geométrico, partindo do RN 2264-N do IBGE (Datum Imbituba\_SC), com altitude ortométrica 1.126,912m. As poligonais auxiliares então foram calculadas utilizando as coordenadas obtidas anteriormente, tanto topográficas como UTM. Calculou-se as poligonais em UTM

para fins de checagem de fechamento, e depois efetuou-se o cálculo dos pontos em coordenadas topográficas.

### 3.1.4 – Precisões Obtidas

#### - *Marcos de Apoio Geodésicos*

Errors (m)	Errors (ppm)
N: -0.0048	-0.0514
E: -0.0044	-0.0473
U: -0.0026	-0.0281
Total dist (m):	92919.8676
Total Err (ppm):	0.0753

**Erro Linear:**

$$EL = \sqrt{(Erro_N)^2 + (Erro_E)^2}$$

$$EL = \sqrt{(-0,0001)^2 + (0,0003)^2}$$

$$EL = 0,0003 \text{ m}$$

**Precisão Linear:**

$$PL = \frac{\sum LB}{EL}$$

$$PL = \frac{67.494.436,621}{0,0001}$$

$$PL = 1 : 67.494.436$$

#### - *Poligonais Auxiliares*

- Poligonal Auxiliar 1 (GPS02 ao GPS03) – 1:35.383
- Poligonal Auxiliar 2 (GPS04 ao GPS05) – 1:30.785
- Poligonal Auxiliar 3 (GPS06 ao GPS07) – 1:28.045

### 3.1.5 – Relação da Aparelhagem Utilizada

Os equipamentos utilizados para execução do trabalho em referência estão discriminados abaixo:

- 03 receptores GPS geodésicos – Trimble modelo 4600 LS.
- 03 estações totais computadorizadas – Geodimeter (Trimble) com 1” de precisão.
- 07 conjuntos de bastões e prismas.
- 03 Níveis NA-1 Wild.
- Software GPSurvey versão 2.35a – para processamento de dados e cálculos de leituras de satélites.
- Software Topograph versão 3.03.
- AutoCAD versão R14.

### 3.1.6 – Nivelamento

MARCO	NIVELAMENTO	CONTRA	DIFERENÇA	COTA	MARCO	NIVELAMENTO	CONTRA	DIFERENÇA	COTA
GPS01	1.129,628	1.129,626	0,001	1.129,627	MC31	1.335,418	1.335,416	0,002	1.335,417
GPS02	1.124,350	1.124,350	0,000	1.124,350	MC32	1.336,129	1.336,126	0,003	1.336,128
MC01	1.136,941	1.136,940	0,001	1.136,941	MC33	1.334,103	1.334,096	0,007	1.334,100
MC02	1.151,355	1.151,355	0,000	1.151,355	MC34	1.332,171	1.332,166	0,005	1.332,169
MC03	1.169,428	1.169,429	-0,001	1.169,429	MC35	1.330,169	1.330,169	0,000	1.330,169
MC04	1.171,744	1.171,745	-0,001	1.171,745	MC36	1.325,049	1.325,048	0,001	1.325,049
MC05	1.186,228	1.186,228	0,000	1.186,228	MC37	1.321,548	1.321,547	0,001	1.321,548
MC06	1.201,969	1.201,968	0,001	1.201,969	MC38	1.314,241	1.314,239	0,002	1.314,240
MC07	1.214,061	1.214,053	0,008	1.214,057	GPS05	1.307,807	1.307,802	0,005	1.307,805
MC08	1.221,446	1.221,439	0,007	1.221,443	GPS06	1.304,220	1.304,219	0,001	1.304,220
MC09	1.226,226	1.226,218	0,008	1.226,222	MC39	1.297,753	1.297,751	0,002	1.297,752
MC10	1.229,605	1.229,599	0,006	1.229,602	MC40	1.294,694	1.294,691	0,003	1.294,693
MC11	1.233,505	1.233,503	0,002	1.233,504	MC41	1.289,607	1.289,599	0,008	1.289,603
MC12	1.237,236	1.237,235	0,001	1.237,236	MC42	1.285,342	1.285,335	0,007	1.285,339
MC13	1.242,016	1.242,015	0,001	1.242,016	MC43	1.280,134	1.280,126	0,008	1.280,130
MC14	1.249,517	1.249,515	0,002	1.249,516	MC44	1.272,533	1.272,526	0,007	1.272,530
MC15	1.252,587	1.252,587	0,000	1.252,587	MC45	1.269,371	1.269,366	0,005	1.269,369
MC16	1.259,349	1.259,347	0,002	1.259,348	MC46	1.267,439	1.267,440	-0,001	1.267,440
GPS03	1.261,577	1.261,575	0,002	1.261,576	MC47	1.261,382	1.261,382	0,000	1.261,382
GPS04	1.266,028	1.266,026	0,002	1.266,027	MC48	1.256,478	1.256,478	0,000	1.256,478
MC17	1.270,054	1.270,051	0,003	1.270,053	MC49	1.258,177	1.258,174	0,003	1.258,176
MC18	1.274,761	1.274,760	0,001	1.274,761	MC50	1.265,798	1.265,797	0,001	1.265,798
MC19	1.280,881	1.280,879	0,002	1.280,880	MC51	1.271,046	1.271,044	0,002	1.271,045
MC20	1.286,270	1.286,267	0,003	1.286,269	MC52	1.275,773	1.275,768	0,005	1.275,771
MC21	1.292,359	1.292,358	0,001	1.292,359	MC53	1.277,026	1.277,026	0,000	1.277,026
MC22	1.294,800	1.294,792	0,008	1.294,796	MC54	1.274,374	1.274,372	0,002	1.274,373
MC23	1.296,031	1.296,026	0,005	1.296,029	MC55	1.271,403	1.271,401	0,002	1.271,402
MC24	1.303,074	1.303,068	0,006	1.303,071	MC56	1.266,764	1.266,759	0,005	1.266,762
MC25	1.306,554	1.306,547	0,007	1.306,551	MC57	1.263,031	1.263,032	-0,001	1.263,032
MC26	1.310,990	1.310,991	-0,001	1.310,991	MC58	1.262,899	1.262,899	0,000	1.262,899
MC27	1.315,420	1.315,420	0,000	1.315,420	MC59	1.268,723	1.268,722	0,001	1.268,723
MC28	1.323,901	1.323,899	0,002	1.323,900	MC60	1.274,082	1.274,079	0,003	1.274,081
MC29	1.327,921	1.327,919	0,002	1.327,920	GPS07	1.277,179	1.277,174	0,005	1.277,177
MC30	1.332,479	1.332,478	0,001	1.332,479	GPS08	1.277,679	1.277,674	0,005	1.277,677

### 3.2 – Estudo de Tráfego

Os estudos de tráfego necessários à determinação principalmente da estrutura de pavimentação projetada, foram originados de contagem de tráfego em junho de 2004 por 03 dias comuns em períodos de 24 horas apresentando os seguintes resultados:

ANO	VOLUMES DE TRÁFEGO (VMDAT) ANO 2004						Nº "N"	OBSERV.
	VEICULOS TIPO			SEMI/REB	ONIBUS	TOTAL		
	LEVES	MÉDIOS	PESADOS					
2004	139	48	43	20	15	265	*****	
2005	143	49	44	21	15	272	1.60 E+5	
2006	147	50	45	22	16	280	3.30 E+5	
2007	151	52	46	23	16	288	4.91 E+05	
2008	156	54	47	24	17	298	6.65 E+05	
2009	161	56	48	25	17	307	8.44 E+05	
2010	166	58	49	26	18	317	1.02 E+06	
2011	171	60	50	27	18	326	1.20 E+06	
2012	176	62	52	28	19	337	1.41 E+06	
2013	181	64	54	29	19	347	1.61 E+06	
2014	186	66	56	30	20	358	1,79 E+06	
TAXAS DE CRESCIMENTO DE TRÁFEGO (%)			COMPOSIÇÃO PERCENTUAL DO TRÁFEGO/2004 (%)					
PASSEIO	COLETIVO	CARGA			LEVES	MÉDIOS E ONIBUS	PESADOS	REB/SEMI
3	3	3			52,45	23,77	16,23	7,55
PARAMETROS ADOTADOS NO CÁLCULO DO NÚMERO DE OPERAÇÕES DO EIXO PADRÃO DE 8,2 T - NUMERO "N"								
FATORES DE VEICULOS - FV			FATOR CLIMÁTICO (fr)		FATOR DE PISTA		PERIODO DO PROJETO	
DATA	FV AASHTO		FR		FP		ANOS	
28/06/04	6,08		1		0,5		10	

ANO	VOLUMES DE TRÁFEGO (VMDAT) ANO 2004						Nº "N"	OBSERV.
	VEICULOS TIPO			SEMI/REB	ONIBUS	TOTAL		
	LEVES	MÉDIOS	PESADOS					
2004	163	37	38	20	15	273	*****	
2005	168	38	39	21	15	281	1.45 E+5	
2006	173	39	40	22	16	290	2.95 E+5	
2007	178	40	41	23	16	298	4.42 E+05	
2008	183	41	42	24	17	307	5.99 E+05	
2009	188	42	43	25	17	315	7.62 E+05	
2010	194	43	44	26	18	325	9.30 E+05	
2011	200	44	45	27	18	334	1.10 E+06	
2012	206	45	46	28	19	344	1.28 E+06	
2013	212	46	47	29	19	353	1.44 E+06	
2014	218	47	48	30	20	363	1.63 E+06	
TAXAS DE CRESCIMENTO DE TRÁFEGO (%)			COMPOSIÇÃO PERCENTUAL DO TRÁFEGO/2004 (%)					
PASSEIO	COLETIVO	CARGA			LEVES	MÉDIOS E ONIBUS	PESADOS	REB/SEMI
3	3	3			59,71	19,05	13,92	7,33
PARAMETROS ADOTADOS NO CÁLCULO DO NÚMERO DE OPERAÇÕES DO EIXO PADRÃO DE 8,2 T - NUMERO "N"								
FATORES DE VEICULOS - FV			FATOR CLIMÁTICO (fr)		FATOR DE PISTA		PERIODO DO PROJETO	
DATA	FV AASHTO		FR		FP		ANOS	
29/06/04	7,08		1		0,5		10	

ANO	VOLUMES DE TRÁFEGO (VMDAT) ANO 2004						Nº "N"	OBSERV.	
	VEICULOS TIPO			ONIBUS					TOTAL
	LEVES	MÉDIOS	PESADOS	SEMI/REB	ONIBUS				
2004	183	28	31	19	4	265	*****		
2005	188	29	32	20	15	284	1.21 E+5		
2006	194	30	33	21	16	294	2.43 E+5		
2007	200	31	34	22	16	303	3.73 E+05		
2008	206	32	35	23	17	313	4.98 E+05		
2009	212	33	36	24	17	322	6.37 E+05		
2010	218	34	37	25	18	332	7.81 E+05		
2011	225	35	38	26	18	342	9.12 E+05		
2012	232	36	39	27	19	353	1.06 E+06		
2013	239	37	40	28	19	363	1.22 E+06		
2014	246	38	41	29	20	374	1.36 E+06		
TAXAS DE CRESCIMENTO DE TRÁFEGO (%)				COMPOSIÇÃO PERCENTUAL DO TRÁFEGO/2004 (%)					
PASSEIO	COLETIVO	CARGA			LEVES	MÉDIOS E ONIBUS	PESADOS	REB/SEMI	
3	3	3			69,06	12,08	11,7	7,17	
PARAMETROS ADOTADOS NO CÁLCULO DO NÚMERO DE OPERAÇÕES DO EIXO PADRÃO DE 8,2 T - NUMERO "N"									
FATORES DE VEICULOS - FV			FATOR CLIMÁTICO (fr)		FATOR DE PISTA		PERIODO DO PROJETO		
DATA		FV AASHTO	FR		FP		ANOS		
30/06/04		7,93	1		0,5		10		

A DF-220 apresentou um movimento significativo nos três dias comuns que foram efetuados as contagens de tráfego, conforme demonstrado acima.

O dia 28 de junho de 2004 (segunda-feira) foi o dia de contagem que gerou o maior número "N" = 1,79 E+06 com 47,55% de veículos comerciais.

A região de interesse onde se localiza o trecho, se apresenta com topografia propícia para culturas de grande produção como soja, amplamente implantada no centro-oeste brasileiro, que torna a DF-220 como principal corredor para transporte desta produção em veículos pesados, reboques e semi-reboques.

Conciliado a este fator, as ligações da malha do Distrito Federal, promove a DF-220 escoamento também de produtos industriais e minerais, como observado no tráfego atual, com transporte de cimento e calcário com veículos pesados.

Dentro desta premissa, a projetista considerando o tráfego gerado e atraído devido as melhorias e pavimentação que ocorrerão na rodovia, estimamos para fins de dimensionamento do pavimento um número "N" = 9,0 E+06.

### **3.3 – Estudos de Traçado**



### **3.3.1 – Introdução**

Na fase de reconhecimento do trecho e posteriormente na fase de estudos topográficos constatou-se que o mesmo possui boas condições geométricas horizontais, permitindo utilizar-se o máximo possível da plataforma e leito carroçável existente, sem a necessidade de serem feitas mudanças significativas do traçado, limitando-se apenas a pequenas intervenções de forma obter as melhorias e parâmetros geométricos desejáveis para a classe da rodovia.

### **3.3.2 – Estudos Elaborados**

O traçado da rodovia DF-220 possui como diretriz principal o traçado primitivo, cujo início localiza-se no entroncamento com a DF-180 até o entroncamento com a DF-001 – estas duas rodovias igualmente pavimentadas - com toda sua extensão em área rural. A rodovia desenvolve-se no sentido oeste - leste, em região levemente ondulada desde o km 0 até o km 15,9.

O traçado vertical foi projetado com a preocupação de evitar-se grandes movimentos de terra, com greide projetado atendendo à classe da rodovia, apresentando rampas máximas de 6% em toda a extensão do trecho. O projeto do greide teve como objetivo considerar a estrada existente como subleito.

No item Projeto Geométrico estão apresentados os elementos do traçado horizontal e vertical do trecho mostrando um panorama geral das curvas horizontais, rampas e elementos da curvas verticais entre outros.

### 3.4 – Estudos Hidrológicos

### **3.4.1 – INTRODUÇÃO**

Os Estudos Hidrológicos realizados tiveram por finalidade a obtenção de elementos e o estabelecimento de critérios destinados à suficiência do sistema existente e efetuar o dimensionamento de obras a serem implantadas.

### **3.4.2 – COLETA E ANÁLISE DE DADOS**

Para delimitação das bacias hidrográficas e o levantamento dos perfis longitudinais dos cursos d'água foram utilizadas restituição aerofotogramétrica na escala 1:10000, do Distrito Federal.

Para definição do clima da região foi utilizada a classificação climática de Wladimir Köppen.

### **3.4.3 – ESTUDOS HIDROLÓGICOS E CLIMATOLÓGICOS**

#### **3.4.3.1 – Caracterização do Regime Climático Regional**

##### **3.4.3.1.1 – Clima**

A área do interesse do projeto está localizada no grupo dos climas úmidos tropicais sem estação fria e com temperatura média do mês menos quente acima de 18°C do tipo Aw, conforme a classificação do sistema internacional de Köppen.

O clima Aw caracteriza-se pela por estação seca bem acentuada coincidindo com inverno e tem, pelo menos, um mês com uma altura de chuva inferior a 60 milímetros, correspondendo às savanas tropicais.

##### **3.4.3.1.2 – Vegetação**

Parte da vegetação primitiva foi devastada pela ação antrópica, cedendo lugar para agricultura permanente e temporária terraceadas em curvas de níveis, outra parte, composta por vegetação nativa (cerrado).

##### **3.4.3.1.3 – Hidrologia**

O trecho em questão não possui curso d'água significativo, apenas início de formação de talvegue.

##### **3.4.3.1.4 – Relevo**

O trecho em estudo localiza-se entre o entroncamento DF-180/DF-220 e o entroncamento DF-120/DF-001, com latitude -15°36'58" e longitude 48°11'56" e latitude -15°37'27" e longitude de 48°04'32", respectivamente.

A região possui relevo ondulado.

### 3.4.3.1.5 – Estudo de chuvas intensas

Conforme distribuição de Thiessen, o projeto se localiza no polígono referente a estação pluviométrica da cidade de Brasília, sendo utilizado a equação desenvolvida pelo eng. Antônio Raimundo S. R. Coimbra:

$$i = \frac{878,5 * T^{0,15}}{(d + 9)^{0,75}}$$

Sendo :

T = Tempo de recorrência em anos.

d = Duração da precipitação em minutos.

i = intensidade de chuva em mm/h.

### 3.4.4 – METODOLOGIA PARA ESTIMATIVA DAS VAZÕES

As vazões de projeto foram estimadas através de métodos indiretos, de acordo com as dimensões de suas áreas de drenagem, conforme o quadro a seguir

ÁREA DE ESTUDO (ha)	MÉTODO
Inferior a 50 Entre 50 e 100 Acima de 100	Racional Racional Modificado Soil Conservation Service

As descrições dos métodos e os parâmetros utilizados no cálculo serão apresentados no itens a seguir:

#### 3.4.4.1 – Método Racional

O método racional consiste em calcular a descarga máxima de uma enchente de projeto por uma fórmula simples, relacionado seu valor com a área da bacia e a intensidade da chuva de modo compreensivo e reunindo todas as incertezas sobre os outros fatores num único parâmetro, que é o coeficiente de deflúvio.

Primordialmente o coeficiente de deflúvio representa a relação entre o deflúvio e a precipitação, ele engloba também o efeito da variação de intensidade da chuva e a variação de perdas por retenção e infiltração do solo durante a tempestade de projeto.

Para estabelecer tal fórmula, admiti-se uma chuva de intensidade constante e uniformemente distribuída sobre a superfície da bacia. A duração da deverá ser maior ou igual que o seu tempo de concentração, como a intensidade de chuva decresce com o aumento da duração, a descarga máxima resulta de uma chuva com duração igual ao tempo de concentração da bacia.

As Vazões de projeto dos dispositivos de drenagem superficial da plataforma e do corpo da estrada e das travessias de bacias com áreas de drenagem inferior ou igual a 50 ha serão determinadas a partir do método racional. bacias com áreas de drenagem inferior ou igual a 50 ha serão determinadas a partir do método racional.

### Fórmula Racional:

$$Q = C * I * A / 360$$

Onde :

Q = vazão (m<sup>3</sup>/s).

C = coeficiente de escoamento superficial (adimensional).

A = área de drenagem (ha).

I = intensidade pluviométrica (mm/h).

### Coeficiente de Escoamento Superficial

Foram adotados os seguintes valores para o coeficiente de escoamento superficial ( C ) para o cálculo da vazão de projeto dos dispositivos da plataforma da estrada:

- C = 0,90 - para áreas pavimentadas
- C = 0,70 - para as superfícies em taludes.
- C = 0,35 - para as áreas gramadas.

Para as áreas externas à plataforma da estrada adotaram-se os seguintes valores:

- C = 0,60 – para áreas urbanizadas ou passíveis de serem urbanizadas.
- C = 0,15 a 0,25 – para áreas rurais

### 3.4.4.2 – Método Racional Modificado

Para esse método aplicam-se os mesmos procedimentos do método racional, acrescentado-se o coeficiente empírico “f” que considera a dispersão da chuva. Assim, a formulação matemática deste método obedece a seguinte equação:

$$Q = ( C * A * I * f ) / 360$$

Onde :

$$f = ( A )^{-0,1} ,$$

A = área de drenagem (ha)

Para o valor do tempo total de concentração para bacias com áreas inferiores à 100 ha foi utilizada a fórmula de George Ribeiro:

$$t_c = \frac{16 * L}{(1,05 - 0,2 * P) * i^{0,04}}$$

Sendo:

L = Comprimento da linha de talvegue em km.

P = fração de área coberta por vegetação na bacia em estudo.

i = declividade da bacia em estudo em porcentagem.

### 3.4.4.3 – Método do Hidrograma unitário do "U.S. Soil Conservation Service"

O método do "U.S. SOIL CONSERVATION SERVICE" será aplicado conforme preconizado na publicação "MANUAL DE HIDROLOGIA BÁSICA PARA ESTRUTURAS DE DRENAGEM" do Instituto de Pesquisas Rodoviárias do DNER (1990).

O método do U.S. SOIL CONSERVATION SERVICE, calculada a descarga de uma bacia hidrográfica através do hidrograma triangular composto, que é o resultado da somatória das ordenadas de histogramas unitários simples, para cada intervalo de tempo.

Para a definição da relação entre chuvas e deflúvio, o método utiliza a expressão de Mockus, conforme a seguir indicada :

$$Pe = \frac{(P - 0,2.S)^2}{(P + 0,8.S)}$$

onde :

Pe = Deflúvio, em mm.

P = Precipitações acumuladas, em mm.

S = Capacidade de infiltração do solo, em mm.

O valor de "S" é função do tipo e uso do solo e das condições antecedentes de umidade descrita pela expressão:

$$S = 254 \left[ \frac{100 - I}{CN} \right]$$

Onde:

CN = Curva de deflúvio.

A determinação da vazão de pico dos hidrogramas unitários é feita utilizando-se a seguinte expressão:

$$Q = \frac{0,208 \cdot (Pe \cdot A)}{tp}$$

onde:

Q = Vazão de pico de hidrograma unitário, em m<sup>3</sup>/Seg.

Pe = Excesso de chuva, em mm;

A = Área da bacia hidrográfica, em km<sup>2</sup>.

tp = tempo de ascensão do hidrograma unitário em horas.

Cálculo do tempo de ascensão dos hidrogramas unitários:

$$tp = \left[ \frac{D}{2} \right] + 0,6 \cdot tc$$

onde:

tp = Tempo de ascensão em horas.

D = Intervalo de discretização da chuva, em horas.

Tc = tempo de concentração, em horas.

Cálculo do intervalo temporal de discretização da chuva:

$$D = \frac{t_c}{7,5}$$

onde:

D = Intervalo de discretização da chuva, em horas.  
t<sub>c</sub> = tempo de concentração, em horas.

É admitido o reagrupamento para as chuvas calculadas nos intervalos de tempo, na seguinte ordem: 6, 4, 3, 1, 2 e 5.

De acordo com o procedimento descrito, para cada intervalo temporal de discretização da chuva é obtido um escoamento correspondente à chuva excedente neste período, em função das curvas de escoamento, escolhidas a partir de parâmetros que espelham, de forma genérica, diversas características da bacia hidrográfica.

A partir dos escoamentos obtidos, são definidos os hidrogramas triangulares para cada intervalo temporal de discretização da chuva. Da composição dos hidrogramas triangulares, resulta o hidrograma final de cheia, cujo pico corresponde ao valor de ponta de cheia desejado.

No quadro a seguir são apresentados os valores de CN utilizados quando da aplicação do método do hidrograma unitário, empregado na determinação das vazões de projeto para as bacias estudadas, conforme metodologia “Soil Conservation Service”.

Este método constitui-se num aprimoramento do Método Racional, podendo ser aplicado para bacias com área de drenagem de até 20.000 ha.

Para o valor do tempo total de concentração foi utilizada a fórmula :

$$t_c = 85,2 * (L^3/H)^{0,385}$$

Sendo:

t<sub>c</sub> = tempo de concentração em min.  
L = comprimento da linha de talvegue em km.  
H = desnível médio do projeto em m.

Para o valor da declividade equivalente foi utilizada a expressão:

$$S = \left[ \frac{\sum L}{\frac{L_1}{\sqrt{i_1}} + \frac{L_2}{\sqrt{i_2}} + \dots + \frac{L_n}{\sqrt{i_n}}} \right]^2$$

Sendo:

S = declividade equivalente em m/m.  
L = comprimento da linha de talvegue em km.  
i = declividade da bacia em m/m.

**OBS:** Uma prática usual é adotar os L<sub>i</sub> como sendo a distância entre curvas de nível consecutivas, medidas em planta.

## VALORES DO NÚMERO DE DEFLÚVIO PARA REGIÕES RURAIS

Utilização ou Cobertura do Solo	Condições de Superfície	Tipo de Solo			
		A	B	C	D
Solo lavrado		77	86	91	94
	Segundo maior declive	64	76	84	88
Culturas arvenses	Segundo as curvas de nível	62	74	82	85
	Segundo as curvas de nível e em Terraços	60	71	79	82
	Segundo maior declive	62	75	83	87
Rotações de Cultura	Segundo as curvas de nível	60	72	81	84
	Segundo as curvas de nível e em Terraços	57	70	78	82
	Pobre	68	79	86	89
	Normal	49	69	79	84
Pastagens	Boa	39	61	74	80
	Pobre, segundo as curvas de nível	47	67	81	88
	Normal, segundo as curvas de nível	25	59	75	83
	Boa, segundo as curvas de nível	6	35	70	79
Prado permanente	Normal	30	58	71	78
Zonas sociais rurais	Normal	59	74	82	86
Estradas	Pavimento permeável	72	82	87	89
	Pavimento impermeável	74	84	90	92
	Abertas ou de baixa transpiração	56	75	86	91
	Abertas ou de baixa transpiração	46	68	78	84
Florestas	Normal	36	60	70	76
	Densas ou de alta transpiração	26	52	62	69
	Muito densas ou de alta transpiração	15	44	54	61
Superfície impermeável		100	100	100	100



### VALORES DO NÚMERO DE DEFLÚVIO PARA REGIÕES URBANAS E SUB-URBANAS

Utilização ou Cobertura do Solo		tipo de Solo			
		A	B	C	D
Zonas cultivadas: Sem medidas de conservação do solo		72	81	88	91
Com medidas de conservação do solo		62	71	78	81
Pastagens ou Baldios: Em más condições		68	79	86	89
Em boas condições		39	61	74	80
Prado em boas condições		30	58	71	78
Bosques ou Zonas Florestais: Cobertura má, sem "Mulch"		45	66	77	83
Boa cobertura		25	55	70	77
Espaços abertos, relvados, parques, campos de golf, cemitérios, etc.					
Boas condições: Relva cobrindo mais de 75% da área		39	61	74	80
Condições Razoáveis: Relva cobrindo de 50 a 75% da área		49	69	79	84
Zonas comerciais e de escritórios (85% de área impermeável)		89	92	94	95
Zonas industriais (72% de área impermeável)		81	88	91	93
Zonas Residenciais:					
Áreas médias dos lotes	Percentagem média impermeável				
< 500 m <sup>2</sup>	65%	77	85	90	32
1.000 m <sup>2</sup>	38%	61	75	83	87
1.300 m <sup>2</sup>	30%	57	72	81	86
2.000 m <sup>2</sup>	25%	54	70	90	85
4.000 m <sup>2</sup>	20%	51	68	79	84
Parques de Estacionamento, telhados, viadutos, etc.		98	98	98	98
Arruamentos e Estradas:					
Asfaltadas e com drenagem de águas pluviais		98	98	98	98
Gravilha		76	85	89	91
Terra		72	82	87	89

**OBSERVAÇÕES:**

O solo tipo A é o de mais baixo potencial de deflúvio. Terrenos muito permeáveis com pouco silte e argila.

O solo tipo B tem uma capacidade de infiltração acima da média após o completo umedecimento. Inclui solos arenosos.

O solo tipo C tem uma capacidade de infiltração abaixo da média, após a pré-saturação. Contém percentagem considerável de argila colóide.

O solo tipo D é o de mais alto potencial de deflúvio. Terrenos quase impermeáveis juntos á superfície. Argiloso.

**3.4.4.4 – Período de Retorno**

- |   |                |
|---|----------------|
| - Para dispositivos de drenagem superficial | - T = 10 anos  |
| - Para Bueiros de talvegue                  | - T = 25 anos  |
| - Para Pontes                               | - T = 100 anos |

### 3.5 – Estudos Geotécnicos

### 3.5.1. Introdução

Estudos Geotécnicos foram desenvolvidos visando o fornecimento de subsídios para a elaboração dos Projetos de Drenagem, Terraplenagem e Pavimentação.

Assim, foram desenvolvidos estudos para caracterização do subleito e cortes a serem efetuados em terraplenagem. Foram efetuados ainda trabalhos de pesquisa de ocorrências de materiais para utilização no corpo dos aterros e camadas do pavimento e ensaios completos em laboratório destes materiais.

Todos os resultados obtidos nos Estudos Geotécnicos são apresentados no Anexo 3 A – Estudos Geotécnicos.

### 3.5.2. Estudos de Subleito e Cortes

A prospecção do subleito foi realizada através de sondagem a trado com espaçamento longitudinal de 100 metros para sondagens investigativas com coletas de 200 em 200 metros.

Em cada poço de sondagem foram executados os seguintes serviços:

Classificação expedita e determinação dos diversos horizontes de materiais encontrados até 1,50 m abaixo do greide de projeto;

Coleta de amostras representativas dos materiais dos horizontes detectados para execução, em laboratório, de ensaios de caracterização (LL, LP e granulometria), em todas as amostras coletadas e ensaios de compactação (energia do Próctor Normal) e ISC para amostras coletadas com espaçamento longitudinal máximo de 200 m.

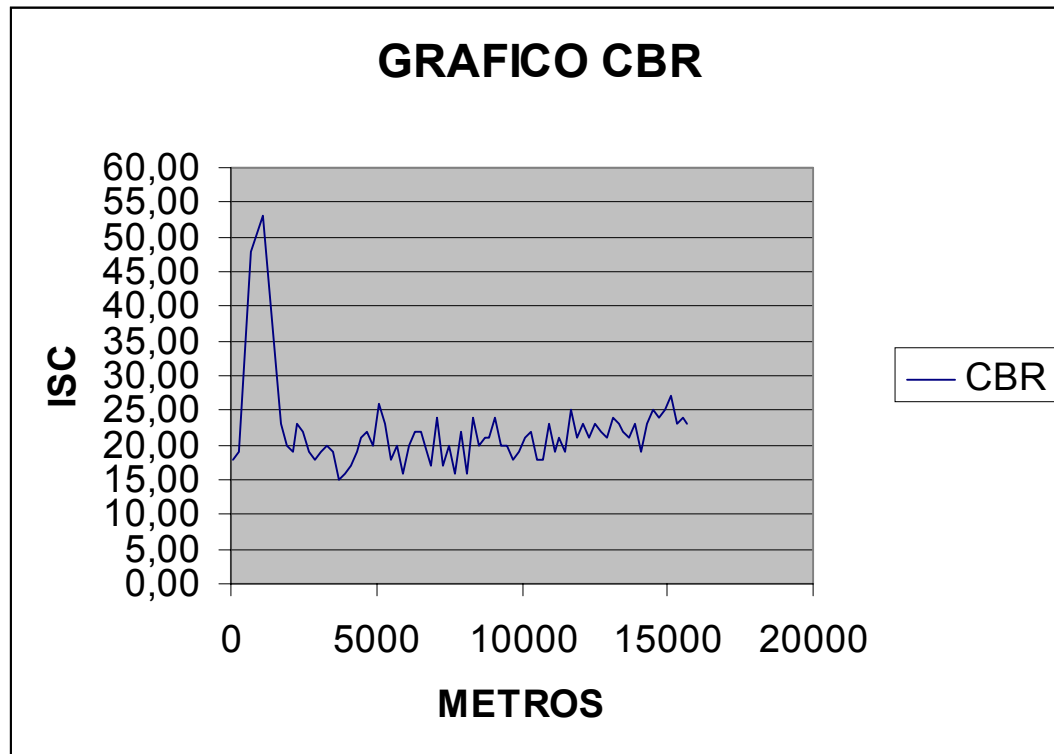
Após a conclusão dos estudos de campo e laboratório, os materiais foram classificados segundo a HRB (Highway Research Board), sendo ainda calculados os Índices de Grupo.

Os resultados dos ensaios foram submetidos a estudos estatísticos, segundo metodologia preconizada pelo DNER, para estimativa dos valores máximos e mínimos.

A seguir, são apresentados os principais parâmetros estatísticos dos ensaios executados com as amostras coletadas no subleito:

	N(n° amostras)	$\bar{X}$	$\sigma$	$\mu 1$	$\mu 2$	Xmin	Xmax
CBR	75	21,59	5,49	19,95	23,22	16,22	26,96

Pelas peculiaridades do Distrito Federal com expansão urbana acima da média nacional e devido a topografia do trecho em questão que promove condições de culturas que exigem transportes pesados como a cultura de soja, o dimensionamento do pavimento será executado levando-se em consideração o Xmin dos cálculos estatísticos acima.



Conforme gráfico analítico acima disposto, observamos as boas condições do sub-leito, com a conclusão de que o trecho é homogêneo em toda sua extensão, fazendo do mesmo apenas um segmento.

### 3.5.3. Estudos de Jazidas

A pesquisa e os estudos de jazidas foram efetuados visando à indicação de materiais passíveis de serem empregados “in natura” e com volume suficiente para o atendimento ao dimensionamento do Projeto de pavimento a pequenas DMTs.

A região em que está inserido o trecho, mostrou-se satisfatória em termos de materiais granulares úteis para utilização na camada de sub-base e base do pavimento.

Foi localizada e estudada 01 (uma) ocorrência de solo granular, a saber:

Jazida - J-01: Ocorrência de cascalho localizada entre as estacas 0+900 e 1+600 no lado direito, com estimativa de volume de 65.600,00 m<sup>3</sup>.

Na área estudada, as sondagens foram efetuadas segundo processo convencional, ou seja, mediante emprego da pá e picareta, com execução de 09 furos com coletas de 09 amostras.

Em cada furo de sondagem executado, os materiais dos horizontes detectados foram classificados expeditamente, e procedida a coleta de amostras representativas dos materiais da área para execução, em laboratório, dos seguintes ensaios:

- Limite de Liquidez;
- Limite de Plasticidade;
- Granulometria por Peneiramento;
- Compactação com a Energia do Próctor Intermediário;
- Índice de Suporte Califórnia;

Concluídos os estudos de campo e laboratório, os materiais foram classificados segundo a HRB (Highway Research Board) e calculados os Índices de Grupo.

Os resultados dos ensaios foram submetidos a estudos estatísticos, segundo a metodologia do DNER, para estimativa dos valores máximos e mínimos.

Apresenta-se a seguir o cálculo estatístico do ISC da Jazida:

Jazida	N(nº amostras)	$\bar{X}$	$\sigma$	$\mu 1$	$\mu 2$	Xmin	Xmax
J01							
CBR	9	92,33	13,56	80,66	103,99	71,44	113,22



## 4.1 – Projeto Geométrico

#### **4.1.1 – Generalidades**

A elaboração do projeto geométrico, desenvolveu-se a partir da base topográfica gerada conforme procedimentos descrito no item Estudos Topográficos, tendo como premissa básica o máximo aproveitamento do traçado atual e das obras de arte correntes existentes, já que a estrada possui geometria atual que atende à classe proposta.

Para o desenvolvimento do mesmo foram utilizados os Estudos topográficos, Geotécnicos, Tráfego e visitas técnicas no local.

#### **4.1.2 – Projeto Planimétrico**

O projeto planimétrico implanta estaqueamento com devidas coordenadas de locação apresentadas a seguir, com ajustes dos raios horizontais, atendendo à classe da rodovia e evitando-se assim desapropriações desnecessárias.

Conforme definição de plataforma – junto à fiscalização do DER-DF – foi lançada em planta, com base topográfica rebaixada, a plataforma acabada (com 15,00m) com devidos off-sets do projeto de terraplenagem.

As superelevações adotadas, calculadas e distribuídas para os trechos em curva obedeceram a parâmetros de rodovias classe III, sendo o giro da plataforma em torno do eixo geométrico.

Foram adotadas superlarguras para raios inferiores a 1.000,00m, atendendo à velocidade de diretriz de 80 km/h.

#### **4.1.3 – Apresentação**

O projeto está apresentado nas escalas 1:1.000 (horizontal) e 1:100 (vertical) e, elaborado de acordo com modelos recomendados pelo DER-DF e que constarão dados em planta do eixo do projeto em km, fracionado de 20 em 20 metros, pontos notáveis das curvas (PC, PT, TE, EC, CE, e ET), bordos da plataforma, “off-sets”, em notação diferenciada para “cortes” e “aterros”, limites da faixa de domínio, elementos cadastrados na faixa topográfica (benfeitorias, divisas de propriedades, nome de proprietários, cursos d’água, estradas e caminho, árvores de maior porte, postes, torres, etc.) e obras de drenagem de grotas, com notação diferenciada para obras “existentes” e a “implantar”.

#### **4.1.4 – Projeto Altimétrico**

O trecho se encontra em relevo ondulado, sendo predominante material de 1ª categoria.

A compensação do material foi longitudinal, sendo que o greide foi projetado de forma que a estrada existente exerça a função de subleito.

#### **4.1.5 – Apresentação**

Em perfil constará, perfil longitudinal do terreno natural, greide ao nível do pavimento acabado, elementos do greide (rampas em %, comprimento e flecha das parábolas “y” e “e<sub>máx</sub>” - cotas dos pontos notáveis - “PIV, PCV e PTV”).



#### **4.1.6 – Relatórios**

A seguir estão os relatórios de Locação, elementos de Curvas Horizontais, Curvas Verticais e Greide+Superelevação da DF-220 e de seus quatro dispositivos (Km 0, Km 5, Km 7 e Km 16).







RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
0	PI-0	0,000	8.271.526,3473	800.457,4133	1.123,530	356°42'18"
0+20,000		20,000	8.271.527,4968	800.477,3802	1.123,089	356°42'18"
0+40,000		40,000	8.271.528,6463	800.497,3472	1.124,098	356°42'18"
0+60,000		60,000	8.271.529,7959	800.517,3141	1.124,752	356°42'18"
0+80,000		80,000	8.271.530,9454	800.537,2811	1.125,450	356°42'18"
0+100,000		100,000	8.271.532,0949	800.557,2480	1.126,290	356°42'18"
0+120,000		120,000	8.271.533,2444	800.577,2149	1.127,056	356°42'18"
0+140,000		140,000	8.271.534,3940	800.597,1819	1.127,673	356°42'18"
0+144,858	V0	144,858	8.271.534,6732	800.602,0318	1.127,894	356°42'18"
0+160,000		160,000	8.271.535,5435	800.617,1488	1.128,505	356°42'18"
0+180,000		180,000	8.271.536,6930	800.637,1157	1.128,990	356°42'18"
0+200,000	PCV1	200,000	8.271.537,8425	800.657,0827	1.129,543	356°42'18"
0+220,000		220,000	8.271.538,9920	800.677,0496	1.130,325	356°42'18"
0+240,000		240,000	8.271.540,1416	800.697,0166	1.131,072	356°42'18"
0+243,697		243,697	8.271.540,3541	800.700,7074	1.131,203	356°42'18"
0+260,000		260,000	8.271.541,2911	800.716,9835	1.131,841	356°42'18"
0+271,283		271,283	8.271.541,9396	800.728,2478	1.132,294	356°42'18"
0+280,000	PTV1	280,000	8.271.542,4406	800.736,9504	1.132,626	356°42'18"
0+284,249	PC1	284,249	8.271.542,6848	800.741,1923	1.132,794	356°42'18"
0+298,870		298,870	8.271.543,6188	800.755,7833	1.133,381	355°58'13"
0+300,000		300,000	8.271.543,6987	800.756,9106	1.133,429	355°54'48"
0+311,283		311,283	8.271.544,5585	800.768,1606	1.133,976	355°20'47"
0+320,000	PCV2	320,000	8.271.545,2989	800.776,8462	1.134,426	354°54'30"
0+340,000		340,000	8.271.547,2486	800.796,7507	1.135,344	353°54'11"
0+360,000		360,000	8.271.549,5472	800.816,6179	1.136,175	352°53'52"
0+380,000		380,000	8.271.552,1939	800.836,4418	1.136,796	351°53'34"
0+400,000	PTV2	400,000	8.271.555,1880	800.856,2161	1.137,337	350°53'15"
0+420,000		420,000	8.271.558,5286	800.875,9349	1.137,882	349°52'56"
0+440,000		440,000	8.271.562,2145	800.895,5920	1.138,458	348°52'37"
0+460,000		460,000	8.271.566,2447	800.915,1815	1.139,015	347°52'19"
0+480,000		480,000	8.271.570,6180	800.934,6972	1.139,540	346°52'00"
0+500,000		500,000	8.271.575,3330	800.954,1333	1.140,101	345°51'41"
0+520,000	PCV3	520,000	8.271.580,3882	800.973,4836	1.140,665	344°51'23"
0+540,000		540,000	8.271.585,7820	800.992,7422	1.141,226	343°51'04"
0+560,000		560,000	8.271.591,5130	801.011,9033	1.141,953	342°50'45"
0+580,000		580,000	8.271.597,5791	801.030,9609	1.142,717	341°50'27"
0+600,000		600,000	8.271.603,9787	801.049,9091	1.143,627	340°50'08"
0+620,000		620,000	8.271.610,7097	801.068,7422	1.144,736	339°49'49"
0+640,000	PTV3	640,000	8.271.617,7700	801.087,4542	1.145,905	338°49'31"
0+660,000		660,000	8.271.625,1575	801.106,0396	1.147,148	337°49'12"
0+680,000	PCV4	680,000	8.271.632,8699	801.124,4924	1.148,475	336°48'53"
0+700,000		700,000	8.271.640,9049	801.142,8072	1.149,722	335°48'35"
0+706,846		706,846	8.271.643,7288	801.149,0434	1.150,133	335°27'56"
0+719,259		719,259	8.271.648,9446	801.160,3074	1.150,837	334°50'30"
0+720,000		720,000	8.271.649,2599	801.160,9781	1.150,879	334°48'16"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
0+733,880	PT1	733,880	8.271.655,2451	801.173,5014	1.151,565	334°06'25"
0+740,000		740,000	8.271.657,9176	801.179,0069	1.151,781	334°06'25"
0+746,846		746,846	8.271.660,9073	801.185,1657	1.152,023	334°06'25"
0+760,000		760,000	8.271.666,6515	801.196,9991	1.152,480	334°06'25"
0+774,432		774,432	8.271.672,9539	801.209,9824	1.152,961	334°06'25"
0+780,000		780,000	8.271.675,3854	801.214,9913	1.153,135	334°06'25"
0+800,000	PTV4	800,000	8.271.684,1193	801.232,9835	1.153,596	334°06'25"
0+820,000		820,000	8.271.692,8532	801.250,9757	1.154,012	334°06'25"
0+840,000	PCV5	840,000	8.271.701,5871	801.268,9679	1.154,428	334°06'25"
0+860,000		860,000	8.271.710,3210	801.286,9601	1.154,853	334°06'25"
0+880,000		880,000	8.271.719,0548	801.304,9523	1.155,551	334°06'25"
0+900,000		900,000	8.271.727,7887	801.322,9445	1.156,384	334°06'25"
0+920,000		920,000	8.271.736,5226	801.340,9367	1.157,434	334°06'25"
0+940,000	PTV5	940,000	8.271.745,2565	801.358,9289	1.158,697	334°06'25"
0+960,000		960,000	8.271.753,9904	801.376,9211	1.160,047	334°06'25"
0+980,000		980,000	8.271.762,7243	801.394,9133	1.161,304	334°06'25"
1	PCV6	1000,000	8.271.771,4582	801.412,9055	1.162,511	334°06'25"
1+20,000		1020,000	8.271.780,1921	801.430,8976	1.163,746	334°06'25"
1+40,000		1040,000	8.271.788,9260	801.448,8898	1.164,926	334°06'25"
1+60,000		1060,000	8.271.797,6599	801.466,8820	1.166,054	334°06'25"
1+80,000		1080,000	8.271.806,3938	801.484,8742	1.167,031	334°06'25"
1+100,000		1100,000	8.271.815,1277	801.502,8664	1.167,868	334°06'25"
1+120,000		1120,000	8.271.823,8616	801.520,8586	1.168,592	334°06'25"
1+140,000		1140,000	8.271.832,5954	801.538,8508	1.168,936	334°06'25"
1+160,000		1160,000	8.271.841,3293	801.556,8430	1.169,201	334°06'25"
1+180,000		1180,000	8.271.850,0632	801.574,8352	1.169,294	334°06'25"
1+200,000		1200,000	8.271.858,7971	801.592,8274	1.169,173	334°06'25"
1+220,000		1220,000	8.271.867,5310	801.610,8196	1.168,763	334°06'25"
1+240,000	PCCV7	1240,000	8.271.876,2649	801.628,8118	1.168,374	334°06'25"
1+260,000		1260,000	8.271.884,9988	801.646,8040	1.168,070	334°06'25"
1+280,000		1280,000	8.271.893,7327	801.664,7962	1.167,799	334°06'25"
1+300,000		1300,000	8.271.902,4666	801.682,7884	1.167,535	334°06'25"
1+320,000		1320,000	8.271.911,2005	801.700,7806	1.167,324	334°06'25"
1+340,000		1340,000	8.271.919,9344	801.718,7728	1.167,299	334°06'25"
1+360,000		1360,000	8.271.928,6683	801.736,7650	1.167,481	334°06'25"
1+380,000		1380,000	8.271.937,4022	801.754,7572	1.168,254	334°06'25"
1+400,000		1400,000	8.271.946,1360	801.772,7494	1.169,524	334°06'25"
1+420,000		1420,000	8.271.954,8699	801.790,7416	1.171,077	334°06'25"
1+440,000		1440,000	8.271.963,6038	801.808,7338	1.172,815	334°06'25"
1+460,000		1460,000	8.271.972,3377	801.826,7260	1.174,628	334°06'25"
1+480,000	PTV7	1480,000	8.271.981,0716	801.844,7182	1.176,458	334°06'25"
1+500,000		1500,000	8.271.989,8055	801.862,7104	1.178,265	334°06'25"
1+520,000		1520,000	8.271.998,5394	801.880,7026	1.180,072	334°06'25"
1+540,000	PCV8	1540,000	8.272.007,2733	801.898,6948	1.181,817	334°06'25"
1+560,000		1560,000	8.272.016,0072	801.916,6869	1.183,289	334°06'25"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
1+580,000		1580,000	8.272.024,7411	801.934,6791	1.184,458	334°06'25"
1+600,000		1600,000	8.272.033,4750	801.952,6713	1.185,530	334°06'25"
1+620,000	PTV8	1620,000	8.272.042,2089	801.970,6635	1.186,595	334°06'25"
1+640,000		1640,000	8.272.050,9428	801.988,6557	1.187,712	334°06'25"
1+660,000		1660,000	8.272.059,6766	802.006,6479	1.188,887	334°06'25"
1+680,000		1680,000	8.272.068,4105	802.024,6401	1.189,979	334°06'25"
1+700,000		1700,000	8.272.077,1444	802.042,6323	1.191,075	334°06'25"
1+720,000		1720,000	8.272.085,8783	802.060,6245	1.192,235	334°06'25"
1+740,000		1740,000	8.272.094,6122	802.078,6167	1.193,508	334°06'25"
1+760,000	PCV9	1760,000	8.272.103,3461	802.096,6089	1.194,748	334°06'25"
1+780,000		1780,000	8.272.112,0800	802.114,6011	1.195,982	334°06'25"
1+800,000		1800,000	8.272.120,8139	802.132,5933	1.197,179	334°06'25"
1+820,000		1820,000	8.272.129,5478	802.150,5855	1.198,298	334°06'25"
1+840,000		1840,000	8.272.138,2817	802.168,5777	1.199,348	334°06'25"
1+860,000		1860,000	8.272.147,0156	802.186,5699	1.200,346	334°06'25"
1+880,000		1880,000	8.272.155,7495	802.204,5621	1.201,276	334°06'25"
1+900,000		1900,000	8.272.164,4834	802.222,5543	1.202,163	334°06'25"
1+920,000		1920,000	8.272.173,2172	802.240,5465	1.202,911	334°06'25"
1+940,000		1940,000	8.272.181,9511	802.258,5387	1.203,619	334°06'25"
1+960,000	PTV9	1960,000	8.272.190,6850	802.276,5309	1.204,336	334°06'25"
1+980,000		1980,000	8.272.199,4189	802.294,5231	1.205,077	334°06'25"
2		2000,000	8.272.208,1528	802.312,5153	1.205,782	334°06'25"
2+20,000		2020,000	8.272.216,8867	802.330,5075	1.206,501	334°06'25"
2+33,644	PC2	2033,644	8.272.222,8448	802.342,7813	1.207,013	334°06'25"
2+40,000		2040,000	8.272.225,6190	802.348,5004	1.207,232	334°08'18"
2+60,000		2060,000	8.272.234,3276	802.366,5049	1.207,912	334°14'13"
2+80,000		2080,000	8.272.243,0050	802.384,5244	1.208,542	334°20'09"
2+100,000		2100,000	8.272.251,6514	802.402,5588	1.209,265	334°26'04"
2+110,000	PCV10	2110,000	8.272.255,9627	802.411,5812	1.209,638	334°29'02"
2+120,000		2120,000	8.272.260,2667	802.420,6081	1.210,009	334°32'00"
2+140,000		2140,000	8.272.268,8508	802.438,6722	1.210,749	334°37'56"
2+160,000		2160,000	8.272.277,4038	802.456,7511	1.211,291	334°43'51"
2+180,000		2180,000	8.272.285,9256	802.474,8448	1.211,908	334°49'47"
2+200,000		2200,000	8.272.294,4162	802.492,9530	1.212,525	334°55'43"
2+220,000		2220,000	8.272.302,8755	802.511,0759	1.213,121	335°01'38"
2+240,000		2240,000	8.272.311,3036	802.529,2134	1.213,714	335°07'34"
2+260,000		2260,000	8.272.319,7004	802.547,3653	1.214,382	335°13'30"
2+280,000		2280,000	8.272.328,0659	802.565,5317	1.214,992	335°19'25"
2+300,000		2300,000	8.272.336,4001	802.583,7125	1.215,537	335°25'21"
2+320,000		2320,000	8.272.344,7029	802.601,9077	1.216,064	335°31'16"
2+340,000		2340,000	8.272.352,9743	802.620,1171	1.216,636	335°37'12"
2+360,000		2360,000	8.272.361,2144	802.638,3408	1.217,231	335°43'08"
2+380,000		2380,000	8.272.369,4229	802.656,5786	1.217,760	335°49'03"
2+400,000		2400,000	8.272.377,6001	802.674,8306	1.218,308	335°54'59"
2+420,000		2420,000	8.272.385,7457	802.693,0966	1.218,841	336°00'55"



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
2+440,000		2440,000	8.272.393,8599	802.711,3767	1.219,336	336°06'50"
2+460,000		2460,000	8.272.401,9425	802.729,6707	1.219,772	336°12'46"
2+480,000		2480,000	8.272.409,9935	802.747,9787	1.220,214	336°18'41"
2+500,000		2500,000	8.272.418,0130	802.766,3004	1.220,637	336°24'37"
2+520,000		2520,000	8.272.426,0009	802.784,6360	1.221,062	336°30'33"
2+540,000		2540,000	8.272.433,9572	802.802,9853	1.221,495	336°36'28"
2+560,000		2560,000	8.272.441,8818	802.821,3484	1.221,930	336°42'24"
2+570,000	PTV10	2570,000	8.272.445,8320	802.830,5345	1.222,158	336°45'22"
2+580,000		2580,000	8.272.449,7747	802.839,7250	1.222,417	336°48'20"
2+600,000		2600,000	8.272.457,6359	802.858,1153	1.222,895	336°54'15"
2+620,000		2620,000	8.272.465,4655	802.876,5190	1.223,502	337°00'11"
2+640,000		2640,000	8.272.473,2632	802.894,9363	1.223,955	337°06'06"
2+660,000		2660,000	8.272.481,0293	802.913,3669	1.224,447	337°12'02"
2+680,000		2680,000	8.272.488,7635	802.931,8109	1.224,975	337°17'58"
2+700,000		2700,000	8.272.496,4659	802.950,2682	1.225,484	337°23'53"
2+720,000		2720,000	8.272.504,1365	802.968,7388	1.225,929	337°29'49"
2+740,000		2740,000	8.272.511,7752	802.987,2226	1.226,622	337°35'45"
2+760,000		2760,000	8.272.519,3820	803.005,7195	1.226,971	337°41'40"
2+780,000		2780,000	8.272.526,9570	803.024,2295	1.227,322	337°47'36"
2+800,000		2800,000	8.272.534,5000	803.042,7525	1.227,809	337°53'32"
2+820,000		2820,000	8.272.542,0111	803.061,2886	1.228,311	337°59'27"
2+840,000		2840,000	8.272.549,4902	803.079,8375	1.228,690	338°05'23"
2+860,000		2860,000	8.272.556,9373	803.098,3993	1.229,182	338°11'18"
2+880,000		2880,000	8.272.564,3524	803.116,9739	1.229,602	338°17'14"
2+900,000		2900,000	8.272.571,7354	803.135,5613	1.229,895	338°23'10"
2+920,000		2920,000	8.272.579,0864	803.154,1614	1.230,157	338°29'05"
2+940,000		2940,000	8.272.586,4053	803.172,7741	1.230,529	338°35'01"
2+960,000		2960,000	8.272.593,6922	803.191,3994	1.230,951	338°40'57"
2+980,000		2980,000	8.272.600,9468	803.210,0372	1.231,282	338°46'52"
3		3000,000	8.272.608,1694	803.228,6876	1.231,622	338°52'48"
3+20,000		3020,000	8.272.615,3598	803.247,3503	1.231,991	338°58'43"
3+40,000		3040,000	8.272.622,5180	803.266,0254	1.232,431	339°04'39"
3+60,000		3060,000	8.272.629,6440	803.284,7129	1.232,869	339°10'35"
3+80,000		3080,000	8.272.636,7377	803.303,4126	1.233,310	339°16'30"
3+100,000		3100,000	8.272.643,7992	803.322,1245	1.233,774	339°22'26"
3+120,000		3120,000	8.272.650,8284	803.340,8485	1.234,273	339°28'22"
3+140,000		3140,000	8.272.657,8254	803.359,5846	1.234,727	339°34'17"
3+160,000		3160,000	8.272.664,7900	803.378,3328	1.235,265	339°40'13"
3+180,000		3180,000	8.272.671,7223	803.397,0930	1.235,768	339°46'08"
3+200,000	PCV11	3200,000	8.272.678,6222	803.415,8650	1.236,175	339°52'04"
3+220,000		3220,000	8.272.685,4898	803.434,6490	1.236,559	339°58'00"
3+240,000		3240,000	8.272.692,3249	803.453,4447	1.236,974	340°03'55"
3+260,000		3260,000	8.272.699,1277	803.472,2523	1.237,419	340°09'51"
3+280,000		3280,000	8.272.705,8980	803.491,0715	1.237,906	340°15'47"
3+300,000		3300,000	8.272.712,6358	803.509,9023	1.238,335	340°21'42"



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
3+320,000	PTV11	3320,000	8.272.719,3412	803.528,7448	1.238,816	340°27'38"
3+340,000		3340,000	8.272.726,0141	803.547,5988	1.239,321	340°33'33"
3+360,000		3360,000	8.272.732,6544	803.566,4642	1.239,830	340°39'29"
3+380,000		3380,000	8.272.739,2623	803.585,3411	1.240,376	340°45'25"
3+400,000		3400,000	8.272.745,8375	803.604,2293	1.240,905	340°51'20"
3+420,000		3420,000	8.272.752,3802	803.623,1289	1.241,238	340°57'16"
3+440,000		3440,000	8.272.758,8903	803.642,0397	1.241,680	341°03'12"
3+460,000		3460,000	8.272.765,3678	803.660,9617	1.242,180	341°09'07"
3+480,000		3480,000	8.272.771,8126	803.679,8948	1.242,699	341°15'03"
3+500,000		3500,000	8.272.778,2248	803.698,8391	1.243,223	341°20'59"
3+520,000		3520,000	8.272.784,6044	803.717,7943	1.243,710	341°26'54"
3+540,000		3540,000	8.272.790,9512	803.736,7605	1.244,184	341°32'50"
3+560,000		3560,000	8.272.797,2653	803.755,7377	1.244,651	341°38'45"
3+580,000		3580,000	8.272.803,5467	803.774,7257	1.245,123	341°44'41"
3+590,000	PCV12	3590,000	8.272.806,6750	803.784,2233	1.245,351	341°47'39"
3+600,000		3600,000	8.272.809,7954	803.793,7245	1.245,604	341°50'37"
3+620,000		3620,000	8.272.816,0112	803.812,7340	1.246,078	341°56'32"
3+640,000		3640,000	8.272.822,1943	803.831,7543	1.246,533	342°02'28"
3+660,000		3660,000	8.272.828,3446	803.850,7851	1.246,941	342°08'24"
3+680,000		3680,000	8.272.834,4621	803.869,8266	1.247,288	342°14'19"
3+700,000		3700,000	8.272.840,5467	803.888,8785	1.247,701	342°20'15"
3+720,000		3720,000	8.272.846,5985	803.907,9409	1.248,056	342°26'10"
3+740,000		3740,000	8.272.852,6174	803.927,0138	1.248,401	342°32'06"
3+760,000		3760,000	8.272.858,6034	803.946,0969	1.248,763	342°38'02"
3+780,000		3780,000	8.272.864,5565	803.965,1904	1.249,145	342°43'57"
3+800,000		3800,000	8.272.870,4767	803.984,2941	1.249,398	342°49'53"
3+820,000		3820,000	8.272.876,3639	804.003,4080	1.249,638	342°55'49"
3+830,000	PTV12	3830,000	8.272.879,2950	804.012,9683	1.249,745	342°58'46"
3+840,000		3840,000	8.272.882,2182	804.022,5320	1.249,853	343°01'44"
3+860,000		3860,000	8.272.888,0394	804.041,6661	1.249,990	343°07'40"
3+880,000		3880,000	8.272.893,8277	804.060,8101	1.250,339	343°13'35"
3+900,000		3900,000	8.272.899,5830	804.079,9642	1.250,660	343°19'31"
3+920,000		3920,000	8.272.905,3052	804.099,1281	1.250,885	343°25'27"
3+940,000		3940,000	8.272.910,9944	804.118,3019	1.251,267	343°31'22"
3+950,000	PCV13	3950,000	8.272.913,8264	804.127,8919	1.251,431	343°34'20"
3+960,000		3960,000	8.272.916,6505	804.137,4854	1.251,580	343°37'18"
3+980,000		3980,000	8.272.922,2735	804.156,6787	1.251,808	343°43'14"
4		4000,000	8.272.927,8635	804.175,8816	1.252,032	343°49'09"
4+20,000		4020,000	8.272.933,4203	804.195,0941	1.252,293	343°55'05"
4+40,000		4040,000	8.272.938,9440	804.214,3162	1.252,753	344°01'01"
4+60,000		4060,000	8.272.944,4345	804.233,5478	1.253,085	344°06'56"
4+80,000		4080,000	8.272.949,8918	804.252,7888	1.253,404	344°12'52"
4+100,000		4100,000	8.272.955,3160	804.272,0393	1.253,655	344°18'47"
4+120,000		4120,000	8.272.960,7070	804.291,2990	1.254,076	344°24'43"
4+140,000		4140,000	8.272.966,0648	804.310,5680	1.254,401	344°30'39"





RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
4+150,000	PTV13	4150,000	8.272.968,7311	804.320,2055	1.254,537	344°33'36"
4+160,000		4160,000	8.272.971,3893	804.329,8462	1.254,718	344°36'34"
4+180,000		4180,000	8.272.976,6806	804.349,1335	1.255,097	344°42'30"
4+200,000		4200,000	8.272.981,9386	804.368,4300	1.255,522	344°48'26"
4+220,000		4220,000	8.272.987,1634	804.387,7355	1.255,989	344°54'21"
4+240,000		4240,000	8.272.992,3549	804.407,0499	1.256,492	345°00'17"
4+260,000		4260,000	8.272.997,5130	804.426,3733	1.257,017	345°06'12"
4+280,000		4280,000	8.273.002,6378	804.445,7056	1.257,456	345°12'08"
4+300,000		4300,000	8.273.007,7293	804.465,0467	1.257,894	345°18'04"
4+320,000		4320,000	8.273.012,7875	804.484,3965	1.258,330	345°23'59"
4+340,000		4340,000	8.273.017,8122	804.503,7550	1.258,799	345°29'55"
4+360,000		4360,000	8.273.022,8036	804.523,1221	1.259,144	345°35'51"
4+380,000		4380,000	8.273.027,7616	804.542,4978	1.259,472	345°41'46"
4+400,000		4400,000	8.273.032,6862	804.561,8821	1.259,875	345°47'42"
4+420,000		4420,000	8.273.037,5773	804.581,2747	1.260,288	345°53'37"
4+440,000		4440,000	8.273.042,4350	804.600,6758	1.260,709	345°59'33"
4+460,000		4460,000	8.273.047,2592	804.620,0853	1.261,146	346°05'29"
4+480,000		4480,000	8.273.052,0500	804.639,5030	1.261,559	346°11'24"
4+500,000		4500,000	8.273.056,8073	804.658,9290	1.262,015	346°17'20"
4+520,000		4520,000	8.273.061,5311	804.678,3631	1.262,431	346°23'16"
4+540,000		4540,000	8.273.066,2213	804.697,8054	1.262,836	346°29'11"
4+560,000		4560,000	8.273.070,8781	804.717,2557	1.263,194	346°35'07"
4+580,000		4580,000	8.273.075,5013	804.736,7140	1.263,547	346°41'02"
4+600,000		4600,000	8.273.080,0909	804.756,1803	1.264,125	346°46'58"
4+620,000		4620,000	8.273.084,6470	804.775,6544	1.264,395	346°52'54"
4+640,000		4640,000	8.273.089,1695	804.795,1364	1.264,717	346°58'49"
4+660,000		4660,000	8.273.093,6584	804.814,6261	1.265,054	347°04'45"
4+680,000		4680,000	8.273.098,1136	804.834,1236	1.265,490	347°10'41"
4+700,000		4700,000	8.273.102,5353	804.853,6287	1.265,931	347°16'36"
4+720,000		4720,000	8.273.106,9233	804.873,1413	1.266,340	347°22'32"
4+740,000		4740,000	8.273.111,2777	804.892,6616	1.266,762	347°28'28"
4+760,000		4760,000	8.273.115,5984	804.912,1893	1.267,170	347°34'23"
4+780,000		4780,000	8.273.119,8855	804.931,7244	1.267,620	347°40'19"
4+800,000		4800,000	8.273.124,1388	804.951,2669	1.268,064	347°46'14"
4+820,000		4820,000	8.273.128,3585	804.970,8167	1.268,485	347°52'10"
4+840,000		4840,000	8.273.132,5444	804.990,3737	1.268,874	347°58'06"
4+860,000		4860,000	8.273.136,6966	805.009,9380	1.269,235	348°04'01"
4+880,000		4880,000	8.273.140,8151	805.029,5093	1.269,641	348°09'57"
4+900,000		4900,000	8.273.144,8998	805.049,0877	1.270,085	348°15'53"
4+920,000		4920,000	8.273.148,9508	805.068,6732	1.270,508	348°21'48"
4+940,000		4940,000	8.273.152,9680	805.088,2656	1.270,906	348°27'44"
4+960,000		4960,000	8.273.156,9514	805.107,8649	1.271,288	348°33'39"
4+980,000		4980,000	8.273.160,9010	805.127,4710	1.271,742	348°39'35"
5		5000,000	8.273.164,8168	805.147,0839	1.272,205	348°45'31"
5+20,000		5020,000	8.273.168,6988	805.166,7036	1.272,740	348°51'26"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
5+40,000		5040,000	8.273.172,5469	805.186,3299	1.273,152	348°57'22"
5+60,000		5060,000	8.273.176,3612	805.205,9628	1.273,538	349°03'18"
5+80,000	PCV14	5080,000	8.273.180,1416	805.225,6022	1.273,967	349°09'13"
5+100,000		5100,000	8.273.183,8882	805.245,2482	1.274,445	349°15'09"
5+120,000		5120,000	8.273.187,6009	805.264,9006	1.274,971	349°21'04"
5+140,000		5140,000	8.273.191,2797	805.284,5593	1.275,403	349°27'00"
5+160,000		5160,000	8.273.194,9246	805.304,2244	1.275,893	349°32'56"
5+180,000		5180,000	8.273.198,5356	805.323,8957	1.276,372	349°38'51"
5+200,000		5200,000	8.273.202,1127	805.343,5732	1.276,758	349°44'47"
5+220,000		5220,000	8.273.205,6558	805.363,2568	1.277,015	349°50'43"
5+240,000		5240,000	8.273.209,1651	805.382,9466	1.277,625	349°56'38"
5+260,000		5260,000	8.273.212,6403	805.402,6423	1.278,178	350°02'34"
5+280,000		5280,000	8.273.216,0816	805.422,3440	1.278,636	350°08'29"
5+300,000	PTV14	5300,000	8.273.219,4889	805.442,0516	1.279,141	350°14'25"
5+320,000		5320,000	8.273.222,8622	805.461,7651	1.279,549	350°20'21"
5+340,000		5340,000	8.273.226,2016	805.481,4843	1.280,040	350°26'16"
5+342,600	ini disp	5342,600	8.273.226,6331	805.484,0478	1.280,108	350°27'03"
5+360,000		5360,000	8.273.229,5069	805.501,2093	1.280,543	350°32'12"
5+380,000		5380,000	8.273.232,7782	805.520,9400	1.280,988	350°38'08"
5+400,000		5400,000	8.273.236,0155	805.540,6762	1.281,497	350°44'03"
5+420,000		5420,000	8.273.239,2188	805.560,4180	1.281,951	350°49'59"
5+440,000		5440,000	8.273.242,3880	805.580,1653	1.282,501	350°55'55"
5+460,000		5460,000	8.273.245,5232	805.599,9181	1.283,054	351°01'50"
5+480,000		5480,000	8.273.248,6243	805.619,6762	1.283,553	351°07'46"
5+500,000		5500,000	8.273.251,6913	805.639,4396	1.284,072	351°13'41"
5+519,571	fim disp	5519,571	8.273.254,6595	805.658,7837	1.284,581	351°19'29"
5+520,000	PCV15	5520,000	8.273.254,7243	805.659,2083	1.284,591	351°19'37"
5+540,000		5540,000	8.273.257,7231	805.678,9822	1.285,049	351°25'33"
5+560,000		5560,000	8.273.260,6879	805.698,7612	1.285,528	351°31'28"
5+580,000		5580,000	8.273.263,6186	805.718,5453	1.285,983	351°37'24"
5+600,000		5600,000	8.273.266,5151	805.738,3345	1.286,433	351°43'20"
5+620,000		5620,000	8.273.269,3775	805.758,1286	1.286,853	351°49'15"
5+637,399	PT2	5637,399	8.273.271,8400	805.775,3524	1.287,287	351°54'25"
5+640,000		5640,000	8.273.272,2061	805.777,9275	1.287,354	351°54'25"
5+660,000		5660,000	8.273.275,0218	805.797,7284	1.287,761	351°54'25"
5+680,000		5680,000	8.273.277,8375	805.817,5292	1.288,145	351°54'25"
5+700,000		5700,000	8.273.280,6531	805.837,3300	1.288,539	351°54'25"
5+720,000		5720,000	8.273.283,4688	805.857,1308	1.288,927	351°54'25"
5+740,000		5740,000	8.273.286,2845	805.876,9316	1.289,306	351°54'25"
5+760,000		5760,000	8.273.289,1001	805.896,7324	1.289,817	351°54'25"
5+780,000		5780,000	8.273.291,9158	805.916,5332	1.290,189	351°54'25"
5+800,000		5800,000	8.273.294,7315	805.936,3340	1.290,479	351°54'25"
5+820,000		5820,000	8.273.297,5471	805.956,1348	1.290,726	351°54'25"
5+840,000		5840,000	8.273.300,3628	805.975,9356	1.291,041	351°54'25"
5+860,000		5860,000	8.273.303,1785	805.995,7364	1.291,378	351°54'25"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
5+880,000		5880,000	8.273.305,9941	806.015,5372	1.291,716	351°54'25"
5+900,000		5900,000	8.273.308,8098	806.035,3381	1.292,037	351°54'25"
5+920,000		5920,000	8.273.311,6255	806.055,1389	1.292,390	351°54'25"
5+940,000		5940,000	8.273.314,4411	806.074,9397	1.292,611	351°54'25"
5+960,000		5960,000	8.273.317,2568	806.094,7405	1.292,804	351°54'25"
5+980,000		5980,000	8.273.320,0725	806.114,5413	1.293,025	351°54'25"
6		6000,000	8.273.322,8881	806.134,3421	1.293,274	351°54'25"
6+20,000		6020,000	8.273.325,7038	806.154,1429	1.293,491	351°54'25"
6+40,000	PTV15	6040,000	8.273.328,5195	806.173,9437	1.293,751	351°54'25"
6+60,000		6060,000	8.273.331,3351	806.193,7445	1.293,981	351°54'25"
6+80,000		6080,000	8.273.334,1508	806.213,5453	1.294,217	351°54'25"
6+100,000		6100,000	8.273.336,9665	806.233,3461	1.294,436	351°54'25"
6+107,060		6107,060	8.273.337,9604	806.240,3358	1.294,514	351°54'25"
6+120,000		6120,000	8.273.339,7821	806.253,1470	1.294,656	351°54'25"
6+140,000	PCV16	6140,000	8.273.342,5978	806.272,9478	1.294,864	351°54'25"
6+144,560		6144,560	8.273.343,2398	806.277,4623	1.294,894	351°54'25"
6+160,000		6160,000	8.273.345,4134	806.292,7486	1.295,035	351°54'25"
6+167,060		6167,060	8.273.346,4074	806.299,7383	1.295,110	351°54'25"
6+180,000		6180,000	8.273.348,2291	806.312,5494	1.295,248	351°54'25"
6+196,964		6196,964	8.273.350,6174	806.329,3444	1.295,384	351°54'25"
6+200,000		6200,000	8.273.351,0448	806.332,3502	1.295,406	351°54'25"
6+219,464		6219,464	8.273.353,7850	806.351,6203	1.295,580	351°54'25"
6+220,000		6220,000	8.273.353,8604	806.352,1510	1.295,586	351°54'25"
6+240,000		6240,000	8.273.356,6761	806.371,9518	1.295,799	351°54'25"
6+256,964		6256,964	8.273.359,0644	806.388,7469	1.295,990	351°54'25"
6+260,000		6260,000	8.273.359,4918	806.391,7526	1.296,025	351°54'25"
6+280,000		6280,000	8.273.362,3074	806.411,5534	1.296,311	351°54'25"
6+300,000		6300,000	8.273.365,1231	806.431,3542	1.296,733	351°54'25"
6+320,000		6320,000	8.273.367,9388	806.451,1550	1.297,139	351°54'25"
6+340,000	PTV16	6340,000	8.273.370,7544	806.470,9558	1.297,571	351°54'25"
6+360,000		6360,000	8.273.373,5701	806.490,7567	1.298,087	351°54'25"
6+380,000		6380,000	8.273.376,3858	806.510,5575	1.298,665	351°54'25"
6+400,000		6400,000	8.273.379,2014	806.530,3583	1.299,180	351°54'25"
6+420,000		6420,000	8.273.382,0171	806.550,1591	1.299,638	351°54'25"
6+440,000		6440,000	8.273.384,8328	806.569,9599	1.300,001	351°54'25"
6+460,000		6460,000	8.273.387,6484	806.589,7607	1.300,435	351°54'25"
6+480,000		6480,000	8.273.390,4641	806.609,5615	1.300,869	351°54'25"
6+500,000		6500,000	8.273.393,2798	806.629,3623	1.301,282	351°54'25"
6+520,000		6520,000	8.273.396,0954	806.649,1631	1.301,688	351°54'25"
6+540,000		6540,000	8.273.398,9111	806.668,9639	1.302,018	351°54'25"
6+560,000		6560,000	8.273.401,7268	806.688,7647	1.302,393	351°54'25"
6+580,000		6580,000	8.273.404,5424	806.708,5656	1.302,749	351°54'25"
6+600,000		6600,000	8.273.407,3581	806.728,3664	1.303,125	351°54'25"
6+620,000		6620,000	8.273.410,1738	806.748,1672	1.303,500	351°54'25"
6+640,000		6640,000	8.273.412,9894	806.767,9680	1.303,864	351°54'25"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
6+660,000		6660,000	8.273.415,8051	806.787,7688	1.304,224	351°54'25"
6+680,000		6680,000	8.273.418,6208	806.807,5696	1.304,687	351°54'25"
6+700,000		6700,000	8.273.421,4364	806.827,3704	1.305,109	351°54'25"
6+720,000		6720,000	8.273.424,2521	806.847,1712	1.305,567	351°54'25"
6+740,000		6740,000	8.273.427,0678	806.866,9720	1.305,989	351°54'25"
6+760,000		6760,000	8.273.429,8834	806.886,7728	1.306,386	351°54'25"
6+780,000		6780,000	8.273.432,6991	806.906,5736	1.306,812	351°54'25"
6+800,000		6800,000	8.273.435,5148	806.926,3744	1.307,340	351°54'25"
6+820,000		6820,000	8.273.438,3304	806.946,1753	1.307,879	351°54'25"
6+840,000		6840,000	8.273.441,1461	806.965,9761	1.308,454	351°54'25"
6+860,000		6860,000	8.273.443,9618	806.985,7769	1.308,982	351°54'25"
6+880,000		6880,000	8.273.446,7774	807.005,5777	1.309,482	351°54'25"
6+900,000		6900,000	8.273.449,5931	807.025,3785	1.309,995	351°54'25"
6+920,000		6920,000	8.273.452,4088	807.045,1793	1.310,430	351°54'25"
6+940,000		6940,000	8.273.455,2244	807.064,9801	1.310,819	351°54'25"
6+960,000		6960,000	8.273.458,0401	807.084,7809	1.311,220	351°54'25"
6+980,000		6980,000	8.273.460,8558	807.104,5817	1.311,573	351°54'25"
7		7000,000	8.273.463,6714	807.124,3825	1.311,870	351°54'25"
7+20,000		7020,000	8.273.466,4871	807.144,1833	1.312,159	351°54'25"
7+40,000		7040,000	8.273.469,3028	807.163,9842	1.312,471	351°54'25"
7+60,000		7060,000	8.273.472,1184	807.183,7850	1.312,867	351°54'25"
7+80,000		7080,000	8.273.474,9341	807.203,5858	1.313,223	351°54'25"
7+100,000		7100,000	8.273.477,7498	807.223,3866	1.313,529	351°54'25"
7+120,000		7120,000	8.273.480,5654	807.243,1874	1.313,861	351°54'25"
7+140,000		7140,000	8.273.483,3811	807.262,9882	1.314,210	351°54'25"
7+160,000		7160,000	8.273.486,1968	807.282,7890	1.314,573	351°54'25"
7+180,000		7180,000	8.273.489,0124	807.302,5898	1.314,950	351°54'25"
7+200,000		7200,000	8.273.491,8281	807.322,3906	1.315,428	351°54'25"
7+220,000		7220,000	8.273.494,6438	807.342,1914	1.315,959	351°54'25"
7+240,000		7240,000	8.273.497,4594	807.361,9922	1.316,432	351°54'25"
7+260,000		7260,000	8.273.500,2751	807.381,7930	1.316,893	351°54'25"
7+280,000		7280,000	8.273.503,0908	807.401,5939	1.317,346	351°54'25"
7+300,000		7300,000	8.273.505,9064	807.421,3947	1.317,730	351°54'25"
7+320,000		7320,000	8.273.508,7221	807.441,1955	1.318,251	351°54'25"
7+340,000		7340,000	8.273.511,5377	807.460,9963	1.318,930	351°54'25"
7+360,000		7360,000	8.273.514,3534	807.480,7971	1.319,164	351°54'25"
7+380,000		7380,000	8.273.517,1691	807.500,5979	1.319,422	351°54'25"
7+382,740		7382,740	8.273.517,5548	807.503,3106	1.319,461	351°54'25"
7+400,000		7400,000	8.273.519,9847	807.520,3987	1.319,795	351°54'25"
7+420,000		7420,000	8.273.522,8004	807.540,1995	1.320,221	351°54'25"
7+421,548		7421,548	8.273.523,0183	807.541,7321	1.320,246	351°54'25"
7+440,000		7440,000	8.273.525,6161	807.560,0003	1.320,549	351°54'25"
7+452,595		7452,595	8.273.527,3892	807.572,4699	1.320,863	351°54'25"
7+460,000		7460,000	8.273.528,4317	807.579,8011	1.321,058	351°54'25"
7+461,548		7461,548	8.273.528,6497	807.581,3337	1.321,099	351°54'25"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
7+480,000		7480,000	8.273.531,2474	807.599,6019	1.321,583	351°54'25"
7+492,595		7492,595	8.273.533,0206	807.612,0715	1.321,900	351°54'25"
7+500,000		7500,000	8.273.534,0631	807.619,4028	1.322,074	351°54'25"
7+518,645		7518,645	8.273.536,6880	807.637,8621	1.322,512	351°54'25"
7+520,000		7520,000	8.273.536,8787	807.639,2036	1.322,544	351°54'25"
7+523,975		7523,975	8.273.537,4384	807.643,1390	1.322,639	351°54'25"
7+534,138		7534,138	8.273.538,8691	807.653,2008	1.322,882	351°54'25"
7+538,051		7538,051	8.273.539,4200	807.657,0748	1.322,976	351°54'25"
7+540,000		7540,000	8.273.539,6944	807.659,0044	1.323,022	351°54'25"
7+546,261		7546,261	8.273.540,5759	807.665,2030	1.323,235	351°54'25"
7+557,472		7557,472	8.273.542,1542	807.676,3024	1.323,603	351°54'25"
7+560,000		7560,000	8.273.542,5101	807.678,8052	1.323,686	351°54'25"
7+579,595		7579,595	8.273.545,2687	807.698,2050	1.324,221	351°54'25"
7+580,000		7580,000	8.273.545,3257	807.698,6060	1.324,231	351°54'25"
7+600,000		7600,000	8.273.548,1414	807.718,4068	1.324,726	351°54'25"
7+610,641		7610,641	8.273.549,6395	807.728,9418	1.325,018	351°54'25"
7+619,595		7619,595	8.273.550,9001	807.737,8066	1.325,249	351°54'25"
7+620,000		7620,000	8.273.550,9571	807.738,2076	1.325,257	351°54'25"
7+640,000		7640,000	8.273.553,7727	807.758,0084	1.325,661	351°54'25"
7+650,642		7650,642	8.273.555,2710	807.768,5444	1.325,849	351°54'25"
7+660,000		7660,000	8.273.556,5884	807.777,8092	1.326,004	351°54'25"
7+680,000		7680,000	8.273.559,4041	807.797,6100	1.326,365	351°54'25"
7+689,450		7689,450	8.273.560,7345	807.806,9659	1.326,538	351°54'25"
7+700,000		7700,000	8.273.562,2197	807.817,4108	1.326,726	351°54'25"
7+720,000		7720,000	8.273.565,0354	807.837,2116	1.327,400	351°54'25"
7+740,000		7740,000	8.273.567,8511	807.857,0125	1.327,630	351°54'25"
7+760,000		7760,000	8.273.570,6667	807.876,8133	1.327,950	351°54'25"
7+780,000		7780,000	8.273.573,4824	807.896,6141	1.328,416	351°54'25"
7+800,000		7800,000	8.273.576,2981	807.916,4149	1.328,779	351°54'25"
7+820,000		7820,000	8.273.579,1137	807.936,2157	1.329,192	351°54'25"
7+840,000		7840,000	8.273.581,9294	807.956,0165	1.329,603	351°54'25"
7+860,000		7860,000	8.273.584,7451	807.975,8173	1.330,018	351°54'25"
7+880,000		7880,000	8.273.587,5607	807.995,6181	1.330,408	351°54'25"
7+900,000		7900,000	8.273.590,3764	808.015,4189	1.330,790	351°54'25"
7+910,000	PCV17	7910,000	8.273.591,7842	808.025,3193	1.330,972	351°54'25"
7+920,000		7920,000	8.273.593,1921	808.035,2197	1.331,149	351°54'25"
7+940,000		7940,000	8.273.596,0077	808.055,0205	1.331,501	351°54'25"
7+960,000		7960,000	8.273.598,8234	808.074,8214	1.331,818	351°54'25"
7+980,000		7980,000	8.273.601,6391	808.094,6222	1.332,130	351°54'25"
8		8000,000	8.273.604,4547	808.114,4230	1.332,450	351°54'25"
8+20,000		8020,000	8.273.607,2704	808.134,2238	1.332,758	351°54'25"
8+40,000		8040,000	8.273.610,0861	808.154,0246	1.333,049	351°54'25"
8+60,000		8060,000	8.273.612,9017	808.173,8254	1.333,316	351°54'25"
8+80,000		8080,000	8.273.615,7174	808.193,6262	1.333,526	351°54'25"
8+100,000		8100,000	8.273.618,5331	808.213,4270	1.333,708	351°54'25"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
8+120,000		8120,000	8.273.621,3487	808.233,2278	1.333,932	351°54'25"
8+140,000		8140,000	8.273.624,1644	808.253,0286	1.334,114	351°54'25"
8+160,000		8160,000	8.273.626,9801	808.272,8294	1.334,308	351°54'25"
8+180,000		8180,000	8.273.629,7957	808.292,6302	1.334,409	351°54'25"
8+200,000		8200,000	8.273.632,6114	808.312,4311	1.334,595	351°54'25"
8+210,000	PTV17	8210,000	8.273.634,0192	808.322,3315	1.334,687	351°54'25"
8+220,000		8220,000	8.273.635,4271	808.332,2319	1.334,767	351°54'25"
8+240,000		8240,000	8.273.638,2427	808.352,0327	1.334,971	351°54'25"
8+260,000		8260,000	8.273.641,0584	808.371,8335	1.335,192	351°54'25"
8+280,000		8280,000	8.273.643,8741	808.391,6343	1.335,356	351°54'25"
8+300,000		8300,000	8.273.646,6897	808.411,4351	1.335,023	351°54'25"
8+320,000		8320,000	8.273.649,5054	808.431,2359	1.334,845	351°54'25"
8+340,000		8340,000	8.273.652,3211	808.451,0367	1.334,950	351°54'25"
8+360,000		8360,000	8.273.655,1367	808.470,8375	1.335,128	351°54'25"
8+380,000		8380,000	8.273.657,9524	808.490,6383	1.335,298	351°54'25"
8+400,000		8400,000	8.273.660,7681	808.510,4391	1.335,677	351°54'25"
8+420,000		8420,000	8.273.663,5837	808.530,2400	1.336,533	351°54'25"
8+440,000	PCV18	8440,000	8.273.666,3994	808.550,0408	1.336,858	351°54'25"
8+460,000		8460,000	8.273.669,2151	808.569,8416	1.337,011	351°54'25"
8+480,000		8480,000	8.273.672,0307	808.589,6424	1.337,094	351°54'25"
8+500,000		8500,000	8.273.674,8464	808.609,4432	1.337,128	351°54'25"
8+520,000		8520,000	8.273.677,6621	808.629,2440	1.337,216	351°54'25"
8+540,000		8540,000	8.273.680,4777	808.649,0448	1.337,277	351°54'25"
8+560,000		8560,000	8.273.683,2934	808.668,8456	1.337,221	351°54'25"
8+580,000		8580,000	8.273.686,1090	808.688,6464	1.337,193	351°54'25"
8+600,000		8600,000	8.273.688,9247	808.708,4472	1.337,244	351°54'25"
8+620,000		8620,000	8.273.691,7404	808.728,2480	1.337,059	351°54'25"
8+640,000	PTV18	8640,000	8.273.694,5560	808.748,0488	1.336,963	351°54'25"
8+660,000		8660,000	8.273.697,3717	808.767,8497	1.336,859	351°54'25"
8+680,000		8680,000	8.273.700,1874	808.787,6505	1.336,731	351°54'25"
8+700,000		8700,000	8.273.703,0030	808.807,4513	1.336,747	351°54'25"
8+720,000		8720,000	8.273.705,8187	808.827,2521	1.336,684	351°54'25"
8+740,000		8740,000	8.273.708,6344	808.847,0529	1.336,502	351°54'25"
8+760,000		8760,000	8.273.711,4500	808.866,8537	1.336,341	351°54'25"
8+780,000		8780,000	8.273.714,2657	808.886,6545	1.336,279	351°54'25"
8+800,000		8800,000	8.273.717,0814	808.906,4553	1.336,150	351°54'25"
8+820,000		8820,000	8.273.719,8970	808.926,2561	1.336,067	351°54'25"
8+840,000		8840,000	8.273.722,7127	808.946,0569	1.335,947	351°54'25"
8+860,000		8860,000	8.273.725,5284	808.965,8577	1.335,845	351°54'25"
8+880,000		8880,000	8.273.728,3440	808.985,6586	1.335,786	351°54'25"
8+900,000		8900,000	8.273.731,1597	809.005,4594	1.335,664	351°54'25"
8+920,000		8920,000	8.273.733,9754	809.025,2602	1.335,566	351°54'25"
8+940,000	PCV19	8940,000	8.273.736,7910	809.045,0610	1.335,527	351°54'25"
8+960,000		8960,000	8.273.739,6067	809.064,8618	1.335,374	351°54'25"
8+980,000		8980,000	8.273.742,4224	809.084,6626	1.335,187	351°54'25"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
9		9000,000	8.273.745,2380	809.104,4634	1.334,981	351°54'25"
9+20,000		9020,000	8.273.748,0537	809.124,2642	1.334,779	351°54'25"
9+40,000		9040,000	8.273.750,8694	809.144,0650	1.334,590	351°54'25"
9+60,000		9060,000	8.273.753,6850	809.163,8658	1.334,331	351°54'25"
9+80,000		9080,000	8.273.756,5007	809.183,6666	1.334,025	351°54'25"
9+100,000		9100,000	8.273.759,3164	809.203,4674	1.333,735	351°54'25"
9+120,000		9120,000	8.273.762,1320	809.223,2683	1.333,437	351°54'25"
9+140,000		9140,000	8.273.764,9477	809.243,0691	1.333,127	351°54'25"
9+160,000		9160,000	8.273.767,7634	809.262,8699	1.332,749	351°54'25"
9+180,000		9180,000	8.273.770,5790	809.282,6707	1.332,299	351°54'25"
9+200,000		9200,000	8.273.773,3947	809.302,4715	1.331,974	351°54'25"
9+220,000	PTV19	9220,000	8.273.776,2104	809.322,2723	1.331,594	351°54'25"
9+240,000		9240,000	8.273.779,0260	809.342,0731	1.331,146	351°54'25"
9+260,000		9260,000	8.273.781,8417	809.361,8739	1.330,688	351°54'25"
9+280,000		9280,000	8.273.784,6574	809.381,6747	1.330,267	351°54'25"
9+300,000		9300,000	8.273.787,4730	809.401,4755	1.329,876	351°54'25"
9+320,000		9320,000	8.273.790,2887	809.421,2763	1.329,522	351°54'25"
9+340,000		9340,000	8.273.793,1044	809.441,0772	1.328,928	351°54'25"
9+360,000		9360,000	8.273.795,9200	809.460,8780	1.328,544	351°54'25"
9+380,000		9380,000	8.273.798,7357	809.480,6788	1.328,028	351°54'25"
9+400,000		9400,000	8.273.801,5514	809.500,4796	1.327,607	351°54'25"
9+420,000		9420,000	8.273.804,3670	809.520,2804	1.327,166	351°54'25"
9+440,000		9440,000	8.273.807,1827	809.540,0812	1.326,720	351°54'25"
9+460,000		9460,000	8.273.809,9984	809.559,8820	1.326,319	351°54'25"
9+480,000		9480,000	8.273.812,8140	809.579,6828	1.325,848	351°54'25"
9+500,000		9500,000	8.273.815,6297	809.599,4836	1.325,349	351°54'25"
9+520,000		9520,000	8.273.818,4454	809.619,2844	1.324,885	351°54'25"
9+540,000		9540,000	8.273.821,2610	809.639,0852	1.324,398	351°54'25"
9+560,000		9560,000	8.273.824,0767	809.658,8860	1.323,798	351°54'25"
9+580,000		9580,000	8.273.826,8924	809.678,6869	1.323,455	351°54'25"
9+600,000		9600,000	8.273.829,7080	809.698,4877	1.323,038	351°54'25"
9+620,000		9620,000	8.273.832,5237	809.718,2885	1.322,607	351°54'25"
9+640,000		9640,000	8.273.835,3394	809.738,0893	1.322,166	351°54'25"
9+660,000		9660,000	8.273.838,1550	809.757,8901	1.321,668	351°54'25"
9+680,000		9680,000	8.273.840,9707	809.777,6909	1.321,217	351°54'25"
9+700,000		9700,000	8.273.843,7864	809.797,4917	1.320,795	351°54'25"
9+720,000		9720,000	8.273.846,6020	809.817,2925	1.320,334	351°54'25"
9+740,000		9740,000	8.273.849,4177	809.837,0933	1.319,854	351°54'25"
9+760,000		9760,000	8.273.852,2333	809.856,8941	1.319,423	351°54'25"
9+780,000		9780,000	8.273.855,0490	809.876,6949	1.319,064	351°54'25"
9+800,000		9800,000	8.273.857,8647	809.896,4958	1.318,571	351°54'25"
9+820,000		9820,000	8.273.860,6803	809.916,2966	1.318,143	351°54'25"
9+840,000		9840,000	8.273.863,4960	809.936,0974	1.317,657	351°54'25"
9+860,000		9860,000	8.273.866,3117	809.955,8982	1.317,198	351°54'25"
9+880,000		9880,000	8.273.869,1273	809.975,6990	1.316,778	351°54'25"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
9+900,000		9900,000	8.273.871,9430	809.995,4998	1.316,340	351°54'25"
9+920,000		9920,000	8.273.874,7587	810.015,3006	1.315,852	351°54'25"
9+940,000		9940,000	8.273.877,5743	810.035,1014	1.315,382	351°54'25"
9+960,000		9960,000	8.273.880,3900	810.054,9022	1.314,908	351°54'25"
9+980,000		9980,000	8.273.883,2057	810.074,7030	1.314,504	351°54'25"
10		10000,000	8.273.886,0213	810.094,5038	1.314,080	351°54'25"
10+20,000		10020,000	8.273.888,8370	810.114,3046	1.313,649	351°54'25"
10+40,000		10040,000	8.273.891,6527	810.134,1055	1.313,200	351°54'25"
10+60,000		10060,000	8.273.894,4683	810.153,9063	1.312,740	351°54'25"
10+80,000		10080,000	8.273.897,2840	810.173,7071	1.312,299	351°54'25"
10+100,000		10100,000	8.273.900,0997	810.193,5079	1.311,859	351°54'25"
10+120,000		10120,000	8.273.902,9153	810.213,3087	1.311,384	351°54'25"
10+140,000		10140,000	8.273.905,7310	810.233,1095	1.311,034	351°54'25"
10+160,000		10160,000	8.273.908,5467	810.252,9103	1.310,522	351°54'25"
10+180,000		10180,000	8.273.911,3623	810.272,7111	1.310,073	351°54'25"
10+200,000		10200,000	8.273.914,1780	810.292,5119	1.309,626	351°54'25"
10+220,000		10220,000	8.273.916,9937	810.312,3127	1.309,169	351°54'25"
10+240,000		10240,000	8.273.919,8093	810.332,1135	1.308,700	351°54'25"
10+260,000		10260,000	8.273.922,6250	810.351,9144	1.308,286	351°54'25"
10+280,000		10280,000	8.273.925,4407	810.371,7152	1.307,825	351°54'25"
10+300,000		10300,000	8.273.928,2563	810.391,5160	1.307,369	351°54'25"
10+320,000		10320,000	8.273.931,0720	810.411,3168	1.306,900	351°54'25"
10+340,000		10340,000	8.273.933,8877	810.431,1176	1.306,498	351°54'25"
10+360,000		10360,000	8.273.936,7033	810.450,9184	1.306,082	351°54'25"
10+380,000		10380,000	8.273.939,5190	810.470,7192	1.305,658	351°54'25"
10+400,000		10400,000	8.273.942,3347	810.490,5200	1.305,231	351°54'25"
10+420,000		10420,000	8.273.945,1503	810.510,3208	1.304,795	351°54'25"
10+440,000		10440,000	8.273.947,9660	810.530,1216	1.304,296	351°54'25"
10+460,000		10460,000	8.273.950,7817	810.549,9224	1.303,803	351°54'25"
10+480,000		10480,000	8.273.953,5973	810.569,7232	1.303,334	351°54'25"
10+500,000		10500,000	8.273.956,4130	810.589,5241	1.302,874	351°54'25"
10+520,000		10520,000	8.273.959,2287	810.609,3249	1.302,424	351°54'25"
10+540,000		10540,000	8.273.962,0443	810.629,1257	1.301,945	351°54'25"
10+560,000		10560,000	8.273.964,8600	810.648,9265	1.301,473	351°54'25"
10+580,000		10580,000	8.273.967,6757	810.668,7273	1.301,031	351°54'25"
10+600,000		10600,000	8.273.970,4913	810.688,5281	1.300,615	351°54'25"
10+620,000		10620,000	8.273.973,3070	810.708,3289	1.300,154	351°54'25"
10+640,000		10640,000	8.273.976,1227	810.728,1297	1.299,711	351°54'25"
10+660,000		10660,000	8.273.978,9383	810.747,9305	1.299,301	351°54'25"
10+680,000		10680,000	8.273.981,7540	810.767,7313	1.298,868	351°54'25"
10+700,000		10700,000	8.273.984,5697	810.787,5321	1.298,384	351°54'25"
10+720,000		10720,000	8.273.987,3853	810.807,3329	1.297,945	351°54'25"
10+740,000		10740,000	8.273.990,2010	810.827,1338	1.297,460	351°54'25"
10+760,000		10760,000	8.273.993,0167	810.846,9346	1.297,021	351°54'25"
10+780,000		10780,000	8.273.995,8323	810.866,7354	1.296,579	351°54'25"





RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
10+800,000		10800,000	8.273.998,6480	810.886,5362	1.296,144	351°54'25"
10+820,000		10820,000	8.274.001,4637	810.906,3370	1.295,697	351°54'25"
10+840,000		10840,000	8.274.004,2793	810.926,1378	1.295,232	351°54'25"
10+860,000		10860,000	8.274.007,0950	810.945,9386	1.294,804	351°54'25"
10+880,000		10880,000	8.274.009,9107	810.965,7394	1.294,170	351°54'25"
10+900,000		10900,000	8.274.012,7263	810.985,5402	1.293,737	351°54'25"
10+920,000		10920,000	8.274.015,5420	811.005,3410	1.293,273	351°54'25"
10+940,000		10940,000	8.274.018,3576	811.025,1418	1.292,933	351°54'25"
10+960,000		10960,000	8.274.021,1733	811.044,9427	1.292,571	351°54'25"
10+980,000		10980,000	8.274.023,9890	811.064,7435	1.292,119	351°54'25"
10+994,136		10994,136	8.274.025,9791	811.078,7387	1.291,827	351°54'25"
11		11000,000	8.274.026,8046	811.084,5443	1.291,690	351°54'25"
11+20,000		11020,000	8.274.029,6203	811.104,3451	1.291,188	351°54'25"
11+31,636		11031,636	8.274.031,2585	811.115,8652	1.290,924	351°54'25"
11+40,000		11040,000	8.274.032,4360	811.124,1459	1.290,734	351°54'25"
11+49,482		11049,482	8.274.033,7709	811.133,5335	1.290,518	351°54'25"
11+54,136		11054,136	8.274.034,4261	811.138,1411	1.290,414	351°54'25"
11+60,000		11060,000	8.274.035,2516	811.143,9467	1.290,284	351°54'25"
11+77,068		11077,068	8.274.037,6545	811.160,8447	1.289,897	351°54'25"
11+80,000		11080,000	8.274.038,0673	811.163,7475	1.289,826	351°54'25"
11+84,136		11084,136	8.274.038,6496	811.167,8423	1.289,727	351°54'25"
11+90,034	PC3	11090,034	8.274.039,4799	811.173,6815	1.289,584	351°54'25"
11+100,000		11100,000	8.274.040,8394	811.183,5544	1.289,341	352°24'47"
11+104,655		11104,655	8.274.041,4444	811.188,1698	1.289,231	352°38'58"
11+117,068		11117,068	8.274.042,9648	811.200,4893	1.288,979	353°16'48"
11+120,000		11120,000	8.274.043,3041	811.203,4017	1.288,918	353°25'44"
11+121,968		11121,968	8.274.043,5276	811.205,3568	1.288,874	353°31'44"
11+139,425		11139,425	8.274.045,3607	811.222,7172	1.288,479	354°24'56"
11+140,000		11140,000	8.274.045,4166	811.223,2895	1.288,466	354°26'41"
11+160,000		11160,000	8.274.047,1761	811.243,2117	1.287,977	355°27'38"
11+180,000		11180,000	8.274.048,5821	811.263,1620	1.287,510	356°28'36"
11+181,790		11181,790	8.274.048,6907	811.264,9486	1.287,470	356°34'03"
11+200,000		11200,000	8.274.049,6342	811.283,1340	1.287,052	357°29'33"
11+220,000		11220,000	8.274.050,3321	811.303,1216	1.286,602	358°30'30"
11+240,000		11240,000	8.274.050,6754	811.323,1184	1.286,004	359°31'27"
11+260,000		11260,000	8.274.050,6642	811.343,1181	1.285,591	0°32'24"
11+280,000		11280,000	8.274.050,2984	811.363,1145	1.285,181	1°33'22"
11+300,000		11300,000	8.274.049,5781	811.383,1013	1.284,671	2°34'19"
11+320,000		11320,000	8.274.048,5036	811.403,0721	1.284,160	3°35'16"
11+340,000		11340,000	8.274.047,0751	811.423,0208	1.283,675	4°36'13"
11+360,000		11360,000	8.274.045,2933	811.442,9410	1.283,212	5°37'10"
11+380,000		11380,000	8.274.043,1585	811.462,8265	1.282,792	6°38'07"
11+400,000		11400,000	8.274.040,6715	811.482,6710	1.282,315	7°39'05"
11+413,880		11413,880	8.274.038,7389	811.496,4156	1.281,970	8°21'23"
11+420,000		11420,000	8.274.037,8330	811.502,4683	1.281,826	8°40'02"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
11+440,000		11440,000	8.274.034,6440	811.522,2121	1.281,354	9°40'59"
11+456,245		11456,245	8.274.031,7964	811.538,2053	1.280,891	10°30'29"
11+460,000		11460,000	8.274.031,1055	811.541,8963	1.280,826	10°41'56"
11+473,702		11473,702	8.274.028,4800	811.555,3442	1.280,461	11°23'42"
11+480,000		11480,000	8.274.027,2185	811.561,5147	1.280,340	11°42'53"
11+500,000		11500,000	8.274.022,9843	811.581,0611	1.279,893	12°43'51"
11+503,610		11503,610	8.274.022,1831	811.584,5810	1.279,805	12°54'51"
11+520,000	PCV20	11520,000	8.274.018,4042	811.600,5293	1.279,411	13°44'48"
11+540,000		11540,000	8.274.013,4796	811.619,9133	1.278,894	14°45'45"
11+540,040		11540,040	8.274.013,4695	811.619,9519	1.278,892	14°45'52"
11+557,497		11557,497	8.274.008,8902	811.636,7974	1.278,403	15°39'04"
11+560,000		11560,000	8.274.008,2122	811.639,2069	1.278,344	15°46'42"
11+580,000		11580,000	8.274.002,6035	811.658,4041	1.277,878	16°47'39"
11+599,862		11599,862	8.273.996,6976	811.677,3674	1.277,415	17°48'11"
11+600,000		11600,000	8.273.996,6554	811.677,4989	1.277,412	17°48'36"
11+620,000		11620,000	8.273.990,3697	811.696,4851	1.276,960	18°49'34"
11+640,000		11640,000	8.273.983,7483	811.715,3570	1.276,509	19°50'31"
11+660,000		11660,000	8.273.976,7934	811.734,1085	1.276,024	20°51'28"
11+680,000		11680,000	8.273.969,5071	811.752,7337	1.275,547	21°52'25"
11+700,000		11700,000	8.273.961,8917	811.771,2268	1.275,072	22°53'22"
11+720,000		11720,000	8.273.953,9497	811.789,5821	1.274,589	23°54'19"
11+740,000		11740,000	8.273.945,6834	811.807,7936	1.274,146	24°55'17"
11+760,000		11760,000	8.273.937,0956	811.825,8557	1.273,611	25°56'14"
11+780,000		11780,000	8.273.928,1889	811.843,7626	1.273,093	26°57'11"
11+800,000		11800,000	8.273.918,9662	811.861,5089	1.272,526	27°58'08"
11+820,000		11820,000	8.273.909,4302	811.879,0889	1.271,918	28°59'05"
11+840,000		11840,000	8.273.899,5841	811.896,4970	1.271,454	30°00'03"
11+860,000		11860,000	8.273.889,4308	811.913,7278	1.270,841	31°01'00"
11+880,000		11880,000	8.273.878,9737	811.930,7759	1.270,255	32°01'57"
11+900,000		11900,000	8.273.868,2160	811.947,6360	1.269,679	33°02'54"
11+920,000	PTV20	11920,000	8.273.857,1610	811.964,3026	1.269,097	34°03'51"
11+940,000		11940,000	8.273.845,8123	811.980,7706	1.268,438	35°04'48"
11+960,000		11960,000	8.273.834,1733	811.997,0349	1.267,786	36°05'46"
11+980,000		11980,000	8.273.822,2479	812.013,0902	1.267,201	37°06'43"
12		12000,000	8.273.810,0397	812.028,9315	1.266,679	38°07'40"
12+20,000		12020,000	8.273.797,5525	812.044,5540	1.266,035	39°08'37"
12+40,000		12040,000	8.273.784,7903	812.059,9525	1.265,420	40°09'34"
12+60,000		12060,000	8.273.771,7571	812.075,1224	1.264,787	41°10'31"
12+80,000		12080,000	8.273.758,4570	812.090,0589	1.264,158	42°11'29"
12+100,000		12100,000	8.273.744,8942	812.104,7572	1.263,569	43°12'26"
12+120,000		12120,000	8.273.731,0729	812.119,2127	1.262,994	44°13'23"
12+140,000		12140,000	8.273.716,9975	812.133,4209	1.262,363	45°14'20"
12+160,000		12160,000	8.273.702,6724	812.147,3773	1.261,729	46°15'17"
12+180,000		12180,000	8.273.688,1022	812.161,0775	1.261,074	47°16'15"
12+200,000		12200,000	8.273.673,2913	812.174,5172	1.260,489	48°17'12"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
12+219,011		12219,011	8.273.658,9940	812.187,0470	1.259,936	49°15'08"
12+220,000		12220,000	8.273.658,2444	812.187,6923	1.259,906	49°18'09"
12+233,632	PT3	12233,632	8.273.647,8560	812.196,5183	1.259,478	49°59'42"
12+240,000		12240,000	8.273.642,9779	812.200,6123	1.259,262	49°59'42"
12+246,597		12246,597	8.273.637,9250	812.204,8530	1.259,048	49°59'42"
12+260,000		12260,000	8.273.627,6582	812.213,4694	1.258,643	49°59'42"
12+274,183		12274,183	8.273.616,7945	812.222,5868	1.258,266	49°59'42"
12+280,000		12280,000	8.273.612,3384	812.226,3266	1.258,130	49°59'42"
12+300,000		12300,000	8.273.597,0187	812.239,1837	1.257,526	49°59'42"
12+320,000		12320,000	8.273.581,6989	812.252,0408	1.256,871	49°59'42"
12+340,000		12340,000	8.273.566,3792	812.264,8979	1.256,279	49°59'42"
12+360,000		12360,000	8.273.551,0595	812.277,7550	1.255,646	49°59'42"
12+380,000		12380,000	8.273.535,7397	812.290,6122	1.254,972	49°59'42"
12+400,000		12400,000	8.273.520,4200	812.303,4693	1.254,423	49°59'42"
12+420,000		12420,000	8.273.505,1002	812.316,3264	1.253,760	49°59'42"
12+440,000	PCV21	12440,000	8.273.489,7805	812.329,1835	1.253,233	49°59'42"
12+460,000		12460,000	8.273.474,4608	812.342,0407	1.252,716	49°59'42"
12+480,000		12480,000	8.273.459,1410	812.354,8978	1.252,228	49°59'42"
12+500,000		12500,000	8.273.443,8213	812.367,7549	1.251,955	49°59'42"
12+520,000		12520,000	8.273.428,5015	812.380,6120	1.251,862	49°59'42"
12+540,000		12540,000	8.273.413,1818	812.393,4691	1.251,716	49°59'42"
12+560,000		12560,000	8.273.397,8621	812.406,3263	1.251,720	49°59'42"
12+580,000		12580,000	8.273.382,5423	812.419,1834	1.251,779	49°59'42"
12+600,000		12600,000	8.273.367,2226	812.432,0405	1.251,944	49°59'42"
12+620,000		12620,000	8.273.351,9028	812.444,8976	1.252,234	49°59'42"
12+640,000	PTV21	12640,000	8.273.336,5831	812.457,7548	1.252,715	49°59'42"
12+660,000		12660,000	8.273.321,2634	812.470,6119	1.253,141	49°59'42"
12+680,000		12680,000	8.273.305,9436	812.483,4690	1.253,632	49°59'42"
12+700,000		12700,000	8.273.290,6239	812.496,3261	1.254,124	49°59'42"
12+720,000		12720,000	8.273.275,3042	812.509,1832	1.254,590	49°59'42"
12+740,000		12740,000	8.273.259,9844	812.522,0404	1.255,057	49°59'42"
12+760,000		12760,000	8.273.244,6647	812.534,8975	1.255,840	49°59'42"
12+780,000		12780,000	8.273.229,3449	812.547,7546	1.256,126	49°59'42"
12+800,000		12800,000	8.273.214,0252	812.560,6117	1.256,610	49°59'42"
12+820,000		12820,000	8.273.198,7055	812.573,4689	1.257,053	49°59'42"
12+840,000		12840,000	8.273.183,3857	812.586,3260	1.257,511	49°59'42"
12+860,000		12860,000	8.273.168,0660	812.599,1831	1.257,983	49°59'42"
12+880,000		12880,000	8.273.152,7462	812.612,0402	1.258,438	49°59'42"
12+900,000		12900,000	8.273.137,4265	812.624,8973	1.258,921	49°59'42"
12+920,000		12920,000	8.273.122,1068	812.637,7545	1.259,378	49°59'42"
12+940,000		12940,000	8.273.106,7870	812.650,6116	1.259,780	49°59'42"
12+960,000		12960,000	8.273.091,4673	812.663,4687	1.260,263	49°59'42"
12+980,000		12980,000	8.273.076,1475	812.676,3258	1.260,724	49°59'42"
13		13000,000	8.273.060,8278	812.689,1830	1.261,178	49°59'42"
13+20,000		13020,000	8.273.045,5081	812.702,0401	1.261,641	49°59'42"



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO  
DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
13+40,000		13040,000	8.273.030,1883	812.714,8972	1.262,181	49°59'42"
13+60,000		13060,000	8.273.014,8686	812.727,7543	1.262,644	49°59'42"
13+80,000		13080,000	8.272.999,5488	812.740,6114	1.263,099	49°59'42"
13+100,000		13100,000	8.272.984,2291	812.753,4686	1.263,567	49°59'42"
13+120,000		13120,000	8.272.968,9094	812.766,3257	1.264,054	49°59'42"
13+140,000		13140,000	8.272.953,5896	812.779,1828	1.264,549	49°59'42"
13+160,000		13160,000	8.272.938,2699	812.792,0399	1.265,030	49°59'42"
13+180,000		13180,000	8.272.922,9502	812.804,8971	1.265,475	49°59'42"
13+200,000		13200,000	8.272.907,6304	812.817,7542	1.265,887	49°59'42"
13+220,000		13220,000	8.272.892,3107	812.830,6113	1.266,346	49°59'42"
13+240,000		13240,000	8.272.876,9909	812.843,4684	1.266,842	49°59'42"
13+260,000		13260,000	8.272.861,6712	812.856,3255	1.267,314	49°59'42"
13+280,000		13280,000	8.272.846,3515	812.869,1827	1.267,923	49°59'42"
13+300,000		13300,000	8.272.831,0317	812.882,0398	1.268,400	49°59'42"
13+320,000		13320,000	8.272.815,7120	812.894,8969	1.268,812	49°59'42"
13+340,000		13340,000	8.272.800,3922	812.907,7540	1.269,296	49°59'42"
13+360,000		13360,000	8.272.785,0725	812.920,6112	1.269,830	49°59'42"
13+380,000		13380,000	8.272.769,7528	812.933,4683	1.270,207	49°59'42"
13+400,000		13400,000	8.272.754,4330	812.946,3254	1.270,639	49°59'42"
13+420,000	PCV22	13420,000	8.272.739,1133	812.959,1825	1.271,139	49°59'42"
13+440,000		13440,000	8.272.723,7935	812.972,0396	1.271,579	49°59'42"
13+460,000		13460,000	8.272.708,4738	812.984,8968	1.272,031	49°59'42"
13+480,000		13480,000	8.272.693,1541	812.997,7539	1.272,504	49°59'42"
13+500,000		13500,000	8.272.677,8343	813.010,6110	1.272,882	49°59'42"
13+520,000		13520,000	8.272.662,5146	813.023,4681	1.273,232	49°59'42"
13+540,000		13540,000	8.272.647,1948	813.036,3253	1.273,739	49°59'42"
13+560,000		13560,000	8.272.631,8751	813.049,1824	1.274,100	49°59'42"
13+580,000		13580,000	8.272.616,5554	813.062,0395	1.274,368	49°59'42"
13+600,000		13600,000	8.272.601,2356	813.074,8966	1.274,660	49°59'42"
13+620,000		13620,000	8.272.585,9159	813.087,7537	1.275,000	49°59'42"
13+640,000		13640,000	8.272.570,5961	813.100,6109	1.275,203	49°59'42"
13+660,000		13660,000	8.272.555,2764	813.113,4680	1.275,403	49°59'42"
13+680,000		13680,000	8.272.539,9567	813.126,3251	1.275,637	49°59'42"
13+700,000		13700,000	8.272.524,6369	813.139,1822	1.275,808	49°59'42"
13+720,000		13720,000	8.272.509,3172	813.152,0394	1.275,957	49°59'42"
13+740,000		13740,000	8.272.493,9975	813.164,8965	1.276,114	49°59'42"
13+760,000		13760,000	8.272.478,6777	813.177,7536	1.276,261	49°59'42"
13+780,000		13780,000	8.272.463,3580	813.190,6107	1.276,376	49°59'42"
13+800,000		13800,000	8.272.448,0382	813.203,4678	1.276,492	49°59'42"
13+820,000		13820,000	8.272.432,7185	813.216,3250	1.276,564	49°59'42"
13+840,000		13840,000	8.272.417,3988	813.229,1821	1.276,685	49°59'42"
13+860,000		13860,000	8.272.402,0790	813.242,0392	1.276,802	49°59'42"
13+880,000		13880,000	8.272.386,7593	813.254,8963	1.276,881	49°59'42"
13+900,000		13900,000	8.272.371,4395	813.267,7535	1.276,964	49°59'42"
13+920,000		13920,000	8.272.356,1198	813.280,6106	1.277,032	49°59'42"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
13+940,000		13940,000	8.272.340,8001	813.293,4677	1.277,105	49°59'42"
13+960,000		13960,000	8.272.325,4803	813.306,3248	1.277,141	49°59'42"
13+980,000		13980,000	8.272.310,1606	813.319,1819	1.277,183	49°59'42"
14		14000,000	8.272.294,8408	813.332,0391	1.277,117	49°59'42"
14+20,000		14020,000	8.272.279,5211	813.344,8962	1.277,213	49°59'42"
14+40,000		14040,000	8.272.264,2014	813.357,7533	1.277,219	49°59'42"
14+60,000		14060,000	8.272.248,8816	813.370,6104	1.277,076	49°59'42"
14+80,000		14080,000	8.272.233,5619	813.383,4676	1.276,869	49°59'42"
14+100,000		14100,000	8.272.218,2421	813.396,3247	1.276,717	49°59'42"
14+120,000		14120,000	8.272.202,9224	813.409,1818	1.276,671	49°59'42"
14+140,000		14140,000	8.272.187,6027	813.422,0389	1.276,398	49°59'42"
14+160,000		14160,000	8.272.172,2829	813.434,8960	1.276,233	49°59'42"
14+180,000		14180,000	8.272.156,9632	813.447,7532	1.275,999	49°59'42"
14+181,771		14181,771	8.272.155,6069	813.448,8914	1.275,975	49°59'42"
14+200,000		14200,000	8.272.141,6435	813.460,6103	1.275,777	49°59'42"
14+219,271		14219,271	8.272.126,8824	813.472,9985	1.275,549	49°59'42"
14+220,000		14220,000	8.272.126,3237	813.473,4674	1.275,539	49°59'42"
14+240,000		14240,000	8.272.111,0040	813.486,3245	1.275,238	49°59'42"
14+241,771		14241,771	8.272.109,6477	813.487,4628	1.275,203	49°59'42"
14+260,000		14260,000	8.272.095,6842	813.499,1817	1.274,884	49°59'42"
14+271,771		14271,771	8.272.086,6681	813.506,7485	1.274,704	49°59'42"
14+280,000		14280,000	8.272.080,3645	813.512,0388	1.274,551	49°59'42"
14+294,271		14294,271	8.272.069,4334	813.521,2127	1.274,289	49°59'42"
14+300,000		14300,000	8.272.065,0448	813.524,8959	1.274,202	49°59'42"
14+320,000		14320,000	8.272.049,7250	813.537,7530	1.273,846	49°59'42"
14+331,771		14331,771	8.272.040,7089	813.545,3198	1.273,599	49°59'42"
14+340,000		14340,000	8.272.034,4053	813.550,6101	1.273,401	49°59'42"
14+360,000		14360,000	8.272.019,0855	813.563,4673	1.272,923	49°59'42"
14+380,000	PTV22	14380,000	8.272.003,7658	813.576,3244	1.272,655	49°59'42"
14+400,000		14400,000	8.271.988,4461	813.589,1815	1.272,303	49°59'42"
14+420,000		14420,000	8.271.973,1263	813.602,0386	1.271,939	49°59'42"
14+440,000		14440,000	8.271.957,8066	813.614,8958	1.271,564	49°59'42"
14+460,000		14460,000	8.271.942,4868	813.627,7529	1.271,159	49°59'42"
14+480,000		14480,000	8.271.927,1671	813.640,6100	1.270,728	49°59'42"
14+500,000		14500,000	8.271.911,8474	813.653,4671	1.270,357	49°59'42"
14+520,000		14520,000	8.271.896,5276	813.666,3242	1.270,050	49°59'42"
14+540,000		14540,000	8.271.881,2079	813.679,1814	1.269,587	49°59'42"
14+560,000		14560,000	8.271.865,8881	813.692,0385	1.269,125	49°59'42"
14+580,000		14580,000	8.271.850,5684	813.704,8956	1.268,831	49°59'42"
14+600,000		14600,000	8.271.835,2487	813.717,7527	1.268,386	49°59'42"
14+620,000		14620,000	8.271.819,9289	813.730,6099	1.267,850	49°59'42"
14+640,000		14640,000	8.271.804,6092	813.743,4670	1.267,443	49°59'42"
14+660,000		14660,000	8.271.789,2895	813.756,3241	1.267,037	49°59'42"
14+680,000		14680,000	8.271.773,9697	813.769,1812	1.266,611	49°59'42"
14+700,000		14700,000	8.271.758,6500	813.782,0383	1.266,196	49°59'42"



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DF-220

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
14+720,000		14720,000	8.271.743,3302	813.794,8955	1.265,793	49°59'42"
14+740,000		14740,000	8.271.728,0105	813.807,7526	1.265,394	49°59'42"
14+760,000		14760,000	8.271.712,6908	813.820,6097	1.265,016	49°59'42"
14+780,000		14780,000	8.271.697,3710	813.833,4668	1.264,650	49°59'42"
14+800,000		14800,000	8.271.682,0513	813.846,3240	1.264,259	49°59'42"
14+820,000		14820,000	8.271.666,7315	813.859,1811	1.263,783	49°59'42"
14+840,000		14840,000	8.271.651,4118	813.872,0382	1.263,269	49°59'42"
14+860,000		14860,000	8.271.636,0921	813.884,8953	1.262,956	49°59'42"
14+880,000		14880,000	8.271.620,7723	813.897,7524	1.262,625	49°59'42"
14+900,000		14900,000	8.271.605,4526	813.910,6096	1.262,265	49°59'42"
14+920,000		14920,000	8.271.590,1328	813.923,4667	1.261,886	49°59'42"
14+940,000	PCV23	14940,000	8.271.574,8131	813.936,3238	1.261,431	49°59'42"
14+960,000		14960,000	8.271.559,4934	813.949,1809	1.261,084	49°59'42"
14+980,000		14980,000	8.271.544,1736	813.962,0381	1.260,831	49°59'42"
15		15000,000	8.271.528,8539	813.974,8952	1.260,679	49°59'42"
15+20,000		15020,000	8.271.513,5341	813.987,7523	1.260,506	49°59'42"
15+40,000		15040,000	8.271.498,2144	814.000,6094	1.260,466	49°59'42"
15+60,000		15060,000	8.271.482,8947	814.013,4665	1.260,495	49°59'42"
15+80,000		15080,000	8.271.467,5749	814.026,3237	1.260,651	49°59'42"
15+100,000		15100,000	8.271.452,2552	814.039,1808	1.260,885	49°59'42"
15+120,000		15120,000	8.271.436,9354	814.052,0379	1.261,191	49°59'42"
15+140,000		15140,000	8.271.421,6157	814.064,8950	1.261,467	49°59'42"
15+160,000		15160,000	8.271.406,2960	814.077,7522	1.261,939	49°59'42"
15+180,000	PTV23	15180,000	8.271.390,9762	814.090,6093	1.262,436	49°59'42"
15+200,000		15200,000	8.271.375,6565	814.103,4664	1.262,952	49°59'42"
15+220,000		15220,000	8.271.360,3368	814.116,3235	1.263,508	49°59'42"
15+240,000		15240,000	8.271.345,0170	814.129,1806	1.264,049	49°59'42"
15+260,000		15260,000	8.271.329,6973	814.142,0378	1.264,620	49°59'42"
15+280,000		15280,000	8.271.314,3775	814.154,8949	1.265,141	49°59'42"
15+300,000		15300,000	8.271.299,0578	814.167,7520	1.265,594	49°59'42"
15+320,000		15320,000	8.271.283,7381	814.180,6091	1.266,037	49°59'42"
15+340,000		15340,000	8.271.268,4183	814.193,4663	1.266,525	49°59'42"
15+360,000		15360,000	8.271.253,0986	814.206,3234	1.267,079	49°59'42"
15+380,000		15380,000	8.271.237,7788	814.219,1805	1.267,594	49°59'42"
15+400,000		15400,000	8.271.222,4591	814.232,0376	1.268,119	49°59'42"
15+420,000		15420,000	8.271.207,1394	814.244,8947	1.268,618	49°59'42"
15+440,000		15440,000	8.271.191,8196	814.257,7519	1.269,113	49°59'42"
15+460,000		15460,000	8.271.176,4999	814.270,6090	1.269,683	49°59'42"
15+480,000		15480,000	8.271.161,1801	814.283,4661	1.270,214	49°59'42"
15+500,000		15500,000	8.271.145,8604	814.296,3232	1.270,731	49°59'42"
15+520,000		15520,000	8.271.130,5407	814.309,1804	1.271,295	49°59'42"
15+540,000		15540,000	8.271.115,2209	814.322,0375	1.271,798	49°59'42"
15+560,000	PCV24	15560,000	8.271.099,9012	814.334,8946	1.272,326	49°59'42"
15+580,000		15580,000	8.271.084,5814	814.347,7517	1.272,767	49°59'42"
15+600,000		15600,000	8.271.069,2617	814.360,6088	1.273,204	49°59'42"



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO

DF-220

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
15+620,000		15620,000	8.271.053,9420	814.373,4660	1.273,627	49°59'42"
15+640,000		15640,000	8.271.038,6222	814.386,3231	1.274,018	49°59'42"
15+660,000		15660,000	8.271.023,3025	814.399,1802	1.274,383	49°59'42"
15+680,000		15680,000	8.271.007,9828	814.412,0373	1.274,730	49°59'42"
15+700,000		15700,000	8.270.992,6630	814.424,8944	1.275,112	49°59'42"
15+720,000		15720,000	8.270.977,3433	814.437,7516	1.275,303	49°59'42"
15+740,000		15740,000	8.270.962,0235	814.450,6087	1.275,766	49°59'42"
15+760,000	PTV24	15760,000	8.270.946,7038	814.463,4658	1.276,004	49°59'42"
15+775,199	V25	15775,199	8.270.935,0619	814.473,2363	1.276,157	49°59'42"
15+780,000		15780,000	8.270.931,3841	814.476,3229	1.276,227	49°59'42"
15+800,000		15800,000	8.270.916,0643	814.489,1801	1.276,501	49°59'42"
15+820,000		15820,000	8.270.900,7446	814.502,0372	1.276,742	49°59'42"
15+840,000		15840,000	8.270.885,4248	814.514,8943	1.277,039	49°59'42"
15+860,000		15860,000	8.270.870,1051	814.527,7514	1.276,896	49°59'42"
15+880,000		15880,000	8.270.854,7854	814.540,6085	1.277,054	49°59'42"
15+900,000		15900,000	8.270.839,4656	814.553,4657	1.277,701	49°59'42"
15+920,000		15920,000	8.270.824,1459	814.566,3228	1.277,622	49°59'42"
15+940,000		15940,000	8.270.808,8261	814.579,1799	1.277,613	49°59'42"
15+947,025	PI-4	15947,025	8.270.803,4453	814.583,6958	1.277,571	49°59'42"

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#### 4.1.6.1.2 – Curvas Horizontais





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DF-220



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.271.526,3473	800.457,4133			
			86°42'18"	512,0249	
PI-1	8.271.555,7765	800.968,5918			22°35'54"
			64°06'25"	3.344,0508	
PI-2	8.273.016,1055	803.976,9328			

Ângulo Central:	22°35'54"
Raio:	1.140,0000

Tangente:	227,7761
Corda:	446,7225

Dist. Externa:	22,5326
Desenvolv.:	449,6312

Deflexão/Metro:	0,02512973
G. Curva/Metro:	0,05025946

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	0+284,249	8.271.542,6848	800.741,1923
Centro		8.272.680,8003	800.675,6695
PT1	0+733,880	8.271.655,2451	801.173,5014

Curva Horizontal: PI-2 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-1	8.271.555,7765	800.968,5918			
			64°06'25"	3.344,0508	
PI-2	8.273.016,1055	803.976,9328			17°48'00"
			81°54'25"	7.895,5404	
PI-3	8.274.127,6658	811.793,8370			

Ângulo Central:	17°48'00"
Raio:	11.600,0000

Tangente:	1.816,5114
Corda:	3.589,2806

Dist. Externa:	141,3676
Desenvolv.:	3.603,7555

Deflexão/Metro:	0,00246965
G. Curva/Metro:	0,00493929

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC2	2+33,644	8.272.222,8448	802.342,7813
Centro		8.261.787,3709	807.408,4388
PT2	5+637,399	8.273.271,8400	805.775,3524



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DF-220



Curva Horizontal: PI-3 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-2	8.273.016,1055	803.976,9328			
			81°54'25"	7.895,5404	
PI-3	8.274.127,6658	811.793,8370			58°05'17"
			139°59'42"	4.339,7873	
PI-4	8.270.803,4453	814.583,6958			

Ângulo Central:	58°05'17"
Raio:	1.128,0000

Tangente:	626,3942
Corda:	1.095,2463

Dist. Externa:	162,2533
Desenvolv.:	1.143,5977

Deflexão/Metro:	0,02539707
G. Curva/Metro:	0,05079413

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC3	11+90,034	8.274.039,4799	811.173,6815
Centro		8.272.922,7143	811.332,4851
PT3	12+233,632	8.273.647,8560	812.196,5183

#### 4.1.6.1.3 – Curvas Verticais



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



CURVAS VERTICAIS

DF-220-R01

Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	0+144,858	1.127,838			
			3,39850	95,1420	
PI-1	0+240,000	1.131,072			1,1051
			4,50358	120,0000	
PI-2	0+360,000	1.136,476			

Parábola Simples

Comprimento:	80,0000	Raio Vertical:	7.239,2671	Constante	-0,0000690678	Dist. Externa:	-0,1105
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	0+200,000	1.129,712
PTV1	0+280,000	1.132,873

Curva Vertical: 3 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	0+240,000	1.131,072			
			4,50358	120,0000	
PI-2	0+360,000	1.136,476			1,7019
			2,80173	220,0000	
PI-3	0+580,000	1.142,640			

Parábola Simples

Comprimento:	80,0000	Raio Vertical:	-4.700,7501	Constante	0,0001063660	Dist. Externa:	0,1702
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Pontos Notáveis

Ponto	Estaca	Cota
PCV2	0+320,000	1.134,674
PTV2	0+400,000	1.137,596



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DF-220-R01



Curva Vertical: 4 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-2	0+360,000	1.136,476			
			2,80173	220,0000	
PI-3	0+580,000	1.142,640			3,3506
			6,15238	160,0000	
PI-4	0+740,000	1.152,483			

Parábola Simples

Comprimento:	120,0000	Raio Vertical:	3.581,3971	Constante	-0,0001396103	Dist. Externa:	-0,5026
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Pontos Notáveis

Ponto	Estaca	Cota
PCV3	0+520,000	1.140,959
PTV3	0+640,000	1.146,331

Curva Vertical: 5 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-3	0+580,000	1.142,640			
			6,15238	160,0000	
PI-4	0+740,000	1.152,483			3,9273
			2,22507	150,0000	
PI-5	0+890,000	1.155,821			

Parábola Simples

Comprimento:	120,0000	Raio Vertical:	-3.055,5279	Constante	0,0001636378	Dist. Externa:	0,5891
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Pontos Notáveis

Ponto	Estaca	Cota
PCV4	0+680,000	1.148,792
PTV4	0+800,000	1.153,818



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



CURVAS VERTICAIS

DF-220-R01

Curva Vertical: 6 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-4	0+740,000	1.152,483			
			2,22507	150,0000	
PI-5	0+890,000	1.155,821			4,0358
			6,26087	230,0000	
PI-6	1+120,000	1.170,221			

Parábola Simples

Comprimento:	100,0000	Raio Vertical:	2.477,8217	Constante	-0,0002017901	Dist. Externa:	-0,5045
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Pontos Notáveis

Ponto	Estaca	Cota
PCV5	0+840,000	1.154,708
PTV5	0+940,000	1.158,951

Curva Vertical: 7 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-5	0+890,000	1.155,821			
			6,26087	230,0000	
PI-6	1+120,000	1.170,221			7,6046
			-1,34371	240,0000	
PI-7	1+360,000	1.166,996			

Parábola Simples

Comprimento:	240,0000	Raio Vertical:	-3.155,9937	Constante	0,0001584287	Dist. Externa:	2,2814
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Pontos Notáveis

Ponto	Estaca	Cota
PCV6	1	1.162,708
PCCV7	1+240,000	1.168,609



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DF-220-R01



Curva Vertical: 8 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-6	1+120,000	1.170,221			
			-1,34371	240,0000	
PI-7	1+360,000	1.166,996			9,3437
			8,00000	220,0000	
PI-8	1+580,000	1.184,596			

Parábola Simples

Comprimento:	240,0000	Raio Vertical:	2.568,5733	Constante	-0,0001946606	Dist. Externa:	-2,8031
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV7	1+240,000	1.168,609
PTV7	1+480,000	1.176,596

Curva Vertical: 9 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-7	1+360,000	1.166,996			
			8,00000	220,0000	
PI-8	1+580,000	1.184,596			2,0000
			5,99996	280,0000	
PI-9	1+860,000	1.201,396			

Parábola Simples

Comprimento:	80,0000	Raio Vertical:	-3.999,9286	Constante	0,0001250022	Dist. Externa:	0,2000
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Pontos Notáveis

Ponto	Estaca	Cota
PCV8	1+540,000	1.181,396
PTV8	1+620,000	1.186,996



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DF-220-R01



Curva Vertical: 10 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-8	1+580,000	1.184,596			
			5,99996	280,0000	
PI-9	1+860,000	1.201,396			2,5041
			3,49583	480,0000	
PI-10	2+340,000	1.218,176			

Parábola Simples

Comprimento:	200,0000	Raio Vertical:	-7.986,8028	Constante	0,0000626033	Dist. Externa:	0,6260
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Pontos Notáveis

Ponto	Estaca	Cota
PCV9	1+760,000	1.195,396
PTV9	1+960,000	1.204,892

Curva Vertical: 11 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-9	1+860,000	1.201,396			
			3,49583	480,0000	
PI-10	2+340,000	1.218,176			1,3640
			2,13185	920,0000	
PI-11	3+260,000	1.237,789			

Parábola Simples

Comprimento:	460,0000	Raio Vertical:	-33.724,6985	Constante	0,0000148259	Dist. Externa:	0,7843
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Pontos Notáveis

Ponto	Estaca	Cota
PCV10	2+110,000	1.210,136
PTV10	2+570,000	1.223,079





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DF-220-R01



Curva Vertical: 12 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-10	2+340,000	1.218,176			
			2,13185	920,0000	
PI-11	3+260,000	1.237,789			0,2468
			2,37867	450,0000	
PI-12	3+710,000	1.248,493			

Parábola Simples

Comprimento:	120,0000	Raio Vertical:	48.618,6548	Constante	-0,0000102841	Dist. Externa:	-0,0370
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Pontos Notáveis

Ponto	Estaca	Cota
PCV11	3+200,000	1.236,510
PTV11	3+320,000	1.239,216

Curva Vertical: 13 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-11	3+260,000	1.237,789			
			2,37867	450,0000	
PI-12	3+710,000	1.248,493			1,0431
			1,33559	340,0000	
PI-13	4+50,000	1.253,034			

Parábola Simples

Comprimento:	240,0000	Raio Vertical:	-23.008,8163	Constante	0,0000217308	Dist. Externa:	0,3129
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Pontos Notáveis

Ponto	Estaca	Cota
PCV12	3+590,000	1.245,639
PTV12	3+830,000	1.250,096



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



CURVAS VERTICAIS

DF-220-R01

Curva Vertical: 14 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-12	3+710,000	1.248,493			
			1,33559	340,0000	
PI-13	4+50,000	1.253,034			0,7333
			2,06886	1.140,0000	
PI-14	5+190,000	1.276,619			

Parábola Simples

Comprimento:	200,0000	Raio Vertical:	27.275,0303	Constante	-0,0000183318	Dist. Externa:	-0,1833
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Pontos Notáveis

Ponto	Estaca	Cota
PCV13	3+950,000	1.251,698
PTV13	4+150,000	1.255,103

Curva Vertical: 15 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-13	4+50,000	1.253,034			
			2,06886	1.140,0000	
PI-14	5+190,000	1.276,619			0,4364
			2,50525	590,0000	
PI-15	5+780,000	1.291,400			

Parábola Simples

Comprimento:	220,0000	Raio Vertical:	50.413,0908	Constante	-0,0000099181	Dist. Externa:	-0,1200
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Pontos Notáveis

Ponto	Estaca	Cota
PCV14	5+80,000	1.274,343
PTV14	5+300,000	1.279,375



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DF-220-R01



Curva Vertical: 16 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-14	5+190,000	1.276,619			
			2,50525	590,0000	
PI-15	5+780,000	1.291,400			1,4711
			1,03413	460,0000	
PI-16	6+240,000	1.296,157			

Parábola Simples

Comprimento:	520,0000	Raio Vertical:	-35.347,1271	Constante	0,0000141454	Dist. Externa:	0,9562
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Pontos Notáveis

Ponto	Estaca	Cota
PCV15	5+520,000	1.284,886
PTV15	6+40,000	1.294,089

Curva Vertical: 17 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-15	5+780,000	1.291,400			
			1,03413	460,0000	
PI-16	6+240,000	1.296,157			1,0661
			2,10027	1.820,0000	
PI-17	8+60,000	1.334,382			

Parábola Simples

Comprimento:	200,0000	Raio Vertical:	18.759,1869	Constante	-0,0000266536	Dist. Externa:	-0,2665
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Pontos Notáveis

Ponto	Estaca	Cota
PCV16	6+140,000	1.295,123
PTV16	6+340,000	1.298,257



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



CURVAS VERTICAIS

DF-220-R01

Curva Vertical: 18 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-16	6+240,000	1.296,157			
			2,10027	1.820,0000	
PI-17	8+60,000	1.334,382			1,3938
			0,70646	480,0000	
PI-18	8+540,000	1.337,773			

Parábola Simples

Comprimento:	300,0000	Raio Vertical:	-21.523,6384	Constante	0,0000232303	Dist. Externa:	0,5227
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Pontos Notáveis

Ponto	Estaca	Cota
PCV17	7+910,000	1.331,232
PTV17	8+210,000	1.335,442

Curva Vertical: 19 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-17	8+60,000	1.334,382			
			0,70646	480,0000	
PI-18	8+540,000	1.337,773			1,2092
			-0,50278	540,0000	
PI-19	9+80,000	1.335,058			

Parábola Simples

Comprimento:	200,0000	Raio Vertical:	-16.539,3671	Constante	0,0000302309	Dist. Externa:	0,3023
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Pontos Notáveis

Ponto	Estaca	Cota
PCV18	8+440,000	1.337,067
PTV18	8+640,000	1.337,270



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DF-220-R01



Curva Vertical: 20 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-18	8+540,000	1.337,773			
			-0,50278	540,0000	
PI-19	9+80,000	1.335,058			1,7566
			-2,25936	2.640,0000	
PI-20	11+720,000	1.275,411			

Parábola Simples

Comprimento:	280,0000	Raio Vertical:	-15.940,0466	Constante	0,0000313675	Dist. Externa:	0,6148
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Pontos Notáveis

Ponto	Estaca	Cota
PCV19	8+940,000	1.335,762
PTV19	9+220,000	1.331,895

Curva Vertical: 21 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-19	9+80,000	1.335,058			
			-2,25936	2.640,0000	
PI-20	11+720,000	1.275,411			0,7590
			-3,01838	820,0000	
PI-21	12+540,000	1.250,660			

Parábola Simples

Comprimento:	400,0000	Raio Vertical:	-52.699,6586	Constante	0,0000094877	Dist. Externa:	0,3795
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Pontos Notáveis

Ponto	Estaca	Cota
PCV20	11+520,000	1.279,930
PTV20	11+920,000	1.269,374



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DF-220-R01



Curva Vertical: 22 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-20	11+720,000	1.275,411			
			-3,01838	820,0000	
PI-21	12+540,000	1.250,660			5,3619
			2,34354	1.360,0000	
PI-22	13+900,000	1.282,532			

Parábola Simples

Comprimento:	200,0000	Raio Vertical:	3.730,0057	Constante	-0,0001340481	Dist. Externa:	-1,3405
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Pontos Notáveis

Ponto	Estaca	Cota
PCV21	12+440,000	1.253,679
PTV21	12+640,000	1.253,004

Curva Vertical: 23 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-21	12+540,000	1.250,660			
			2,34354	1.360,0000	
PI-22	13+900,000	1.282,532			4,3403
			-1,99675	1.160,0000	
PI-23	15+60,000	1.259,370			

Parábola Simples

Comprimento:	960,0000	Raio Vertical:	-22.118,3167	Constante	0,0000226057	Dist. Externa:	5,2084
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Pontos Notáveis

Ponto	Estaca	Cota
PCV22	13+420,000	1.271,283
PTV22	14+380,000	1.272,948



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
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Curva Vertical: 24 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-22	13+900,000	1.282,532			
			-1,99675	1.160,0000	
PI-23	15+60,000	1.259,370			4,5974
			2,60067	600,0000	
PI-24	15+660,000	1.274,974			

Parábola Simples

Comprimento:	240,0000	Raio Vertical:	5.220,3230	Constante	-0,0000957795	Dist. Externa:	-1,3792
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Pontos Notáveis

Ponto	Estaca	Cota
PCV23	14+940,000	1.261,766
PTV23	15+180,000	1.262,491

Curva Vertical: 25 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-23	15+60,000	1.259,370			
			2,60067	600,0000	
PI-24	15+660,000	1.274,974			1,2865
			1,31416	115,1990	
PI-25	15+775,199	1.276,488			

Parábola Simples

Comprimento:	200,0000	Raio Vertical:	-15.545,9832	Constante	0,0000321626	Dist. Externa:	0,3216
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Pontos Notáveis

Ponto	Estaca	Cota
PCV24	15+560,000	1.272,373
PTV24	15+760,000	1.276,288

#### 4.1.6.1.4 – Greide + Superelevação





RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
0	PI-0		8.271.526,3473	800.457,4133	1.123,530	356°42'18"			
0+20,000			8.271.527,4968	800.477,3802	1.123,089	356°42'18"			
0+40,000			8.271.528,6463	800.497,3472	1.124,098	356°42'18"			
0+60,000			8.271.529,7959	800.517,3141	1.124,752	356°42'18"			
0+80,000			8.271.530,9454	800.537,2811	1.125,450	356°42'18"			
0+100,000			8.271.532,0949	800.557,2480	1.126,290	356°42'18"			
0+120,000			8.271.533,2444	800.577,2149	1.127,056	356°42'18"			
0+140,000			8.271.534,3940	800.597,1819	1.127,673	356°42'18"			
0+144,858		V0	8.271.534,6732	800.602,0318	1.127,894	356°42'18"	1.127,838	-2,0000	-2,0000
0+160,000			8.271.535,5435	800.617,1488	1.128,505	356°42'18"	1.128,353	-2,0000	-2,0000
0+180,000			8.271.536,6930	800.637,1157	1.128,990	356°42'18"	1.129,032	-2,0000	-2,0000
0+200,000		PCV1	8.271.537,8425	800.657,0827	1.129,543	356°42'18"	1.129,712	-2,0000	-2,0000
0+220,000			8.271.538,9920	800.677,0496	1.130,325	356°42'18"	1.130,419	-2,0000	-2,0000
0+240,000			8.271.540,1416	800.697,0166	1.131,072	356°42'18"	1.131,182	-2,0000	-2,0000
0+243,697			8.271.540,3541	800.700,7074	1.131,203	356°42'18"	1.131,329	-2,0000	-2,0000
0+260,000			8.271.541,2911	800.716,9835	1.131,841	356°42'18"	1.132,000	-2,0000	-0,8180
0+271,283			8.271.541,9396	800.728,2478	1.132,294	356°42'18"	1.132,486	-2,0000	0,0000
0+280,000		PTV1	8.271.542,4406	800.736,9504	1.132,626	356°42'18"	1.132,873	-2,0000	0,6320
0+284,249	PC1		8.271.542,6848	800.741,1923	1.132,794	356°42'18"	1.133,064	-2,0000	0,9400
0+298,870			8.271.543,6188	800.755,7833	1.133,381	355°58'13"	1.133,723	-2,0000	2,0000
0+300,000			8.271.543,6987	800.756,9106	1.133,429	355°54'48"	1.133,774	-2,0819	2,0819
0+311,283			8.271.544,5585	800.768,1606	1.133,976	355°20'47"	1.134,282	-2,9000	2,9000
0+320,000		PCV2	8.271.545,2989	800.776,8462	1.134,426	354°54'30"	1.134,674	-2,9000	2,9000
0+340,000			8.271.547,2486	800.796,7507	1.135,344	353°54'11"	1.135,533	-2,9000	2,9000
0+360,000			8.271.549,5472	800.816,6179	1.136,175	352°53'52"	1.136,306	-2,9000	2,9000
0+380,000			8.271.552,1939	800.836,4418	1.136,796	351°53'34"	1.136,994	-2,9000	2,9000
0+400,000		PTV2	8.271.555,1880	800.856,2161	1.137,337	350°53'15"	1.137,596	-2,9000	2,9000
0+420,000			8.271.558,5286	800.875,9349	1.137,882	349°52'56"	1.138,157	-2,9000	2,9000
0+440,000			8.271.562,2145	800.895,5920	1.138,458	348°52'37"	1.138,717	-2,9000	2,9000
0+460,000			8.271.566,2447	800.915,1815	1.139,015	347°52'19"	1.139,278	-2,9000	2,9000
0+480,000			8.271.570,6180	800.934,6972	1.139,540	346°52'00"	1.139,838	-2,9000	2,9000
0+500,000			8.271.575,3330	800.954,1333	1.140,101	345°51'41"	1.140,398	-2,9000	2,9000
0+520,000		PCV3	8.271.580,3882	800.973,4836	1.140,665	344°51'23"	1.140,959	-2,9000	2,9000
0+540,000			8.271.585,7820	800.992,7422	1.141,226	343°51'04"	1.141,575	-2,9000	2,9000
0+560,000			8.271.591,5130	801.011,9033	1.141,953	342°50'45"	1.142,303	-2,9000	2,9000
0+580,000			8.271.597,5791	801.030,9609	1.142,717	341°50'27"	1.143,142	-2,9000	2,9000
0+600,000			8.271.603,9787	801.049,9091	1.143,627	340°50'08"	1.144,093	-2,9000	2,9000
0+620,000			8.271.610,7097	801.068,7422	1.144,736	339°49'49"	1.145,156	-2,9000	2,9000
0+640,000		PTV3	8.271.617,7700	801.087,4542	1.145,905	338°49'31"	1.146,331	-2,9000	2,9000
0+660,000			8.271.625,1575	801.106,0396	1.147,148	337°49'12"	1.147,562	-2,9000	2,9000
0+680,000		PCV4	8.271.632,8699	801.124,4924	1.148,475	336°48'53"	1.148,792	-2,9000	2,9000
0+700,000			8.271.640,9049	801.142,8072	1.149,722	335°48'35"	1.149,957	-2,9000	2,9000
0+706,846			8.271.643,7288	801.149,0434	1.150,133	335°27'56"	1.150,326	-2,9000	2,9000
0+719,259			8.271.648,9446	801.160,3074	1.150,837	334°50'30"	1.150,955	-2,0000	2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
0+720,000			8.271.649,2599	801.160,9781	1.150,879	334°48'16"	1.150,991	-2,0000	1,9463
0+733,880	PT1		8.271.655,2451	801.173,5014	1.151,565	334°06'25"	1.151,632	-2,0000	0,9400
0+740,000			8.271.657,9176	801.179,0069	1.151,781	334°06'25"	1.151,894	-2,0000	0,4963
0+746,846			8.271.660,9073	801.185,1657	1.152,023	334°06'25"	1.152,173	-2,0000	0,0000
0+760,000			8.271.666,6515	801.196,9991	1.152,480	334°06'25"	1.152,667	-2,0000	-0,9537
0+774,432			8.271.672,9539	801.209,9824	1.152,961	334°06'25"	1.153,143	-2,0000	-2,0000
0+780,000			8.271.675,3854	801.214,9913	1.153,135	334°06'25"	1.153,308	-2,0000	-2,0000
0+800,000		PTV4	8.271.684,1193	801.232,9835	1.153,596	334°06'25"	1.153,818	-2,0000	-2,0000
0+820,000			8.271.692,8532	801.250,9757	1.154,012	334°06'25"	1.154,263	-2,0000	-2,0000
0+840,000		PCV5	8.271.701,5871	801.268,9679	1.154,428	334°06'25"	1.154,708	-2,0000	-2,0000
0+860,000			8.271.710,3210	801.286,9601	1.154,853	334°06'25"	1.155,234	-2,0000	-2,0000
0+880,000			8.271.719,0548	801.304,9523	1.155,551	334°06'25"	1.155,921	-2,0000	-2,0000
0+900,000			8.271.727,7887	801.322,9445	1.156,384	334°06'25"	1.156,770	-2,0000	-2,0000
0+920,000			8.271.736,5226	801.340,9367	1.157,434	334°06'25"	1.157,780	-2,0000	-2,0000
0+940,000		PTV5	8.271.745,2565	801.358,9289	1.158,697	334°06'25"	1.158,951	-2,0000	-2,0000
0+960,000			8.271.753,9904	801.376,9211	1.160,047	334°06'25"	1.160,204	-2,0000	-2,0000
0+980,000			8.271.762,7243	801.394,9133	1.161,304	334°06'25"	1.161,456	-2,0000	-2,0000
1		PCV6	8.271.771,4582	801.412,9055	1.162,511	334°06'25"	1.162,708	-2,0000	-2,0000
1+20,000			8.271.780,1921	801.430,8976	1.163,746	334°06'25"	1.163,897	-2,0000	-2,0000
1+40,000			8.271.788,9260	801.448,8898	1.164,926	334°06'25"	1.164,959	-2,0000	-2,0000
1+60,000			8.271.797,6599	801.466,8820	1.166,054	334°06'25"	1.165,894	-2,0000	-2,0000
1+80,000			8.271.806,3938	801.484,8742	1.167,031	334°06'25"	1.166,703	-2,0000	-2,0000
1+100,000			8.271.815,1277	801.502,8664	1.167,868	334°06'25"	1.167,385	-2,0000	-2,0000
1+120,000			8.271.823,8616	801.520,8586	1.168,592	334°06'25"	1.167,940	-2,0000	-2,0000
1+140,000			8.271.832,5954	801.538,8508	1.168,936	334°06'25"	1.168,368	-2,0000	-2,0000
1+160,000			8.271.841,3293	801.556,8430	1.169,201	334°06'25"	1.168,670	-2,0000	-2,0000
1+180,000			8.271.850,0632	801.574,8352	1.169,294	334°06'25"	1.168,844	-2,0000	-2,0000
1+200,000			8.271.858,7971	801.592,8274	1.169,173	334°06'25"	1.168,893	-2,0000	-2,0000
1+220,000			8.271.867,5310	801.610,8196	1.168,763	334°06'25"	1.168,814	-2,0000	-2,0000
1+240,000		PCCV7	8.271.876,2649	801.628,8118	1.168,374	334°06'25"	1.168,609	-2,0000	-2,0000
1+260,000			8.271.884,9988	801.646,8040	1.168,070	334°06'25"	1.168,418	-2,0000	-2,0000
1+280,000			8.271.893,7327	801.664,7962	1.167,799	334°06'25"	1.168,383	-2,0000	-2,0000
1+300,000			8.271.902,4666	801.682,7884	1.167,535	334°06'25"	1.168,503	-2,0000	-2,0000
1+320,000			8.271.911,2005	801.700,7806	1.167,324	334°06'25"	1.168,779	-2,0000	-2,0000
1+340,000			8.271.919,9344	801.718,7728	1.167,299	334°06'25"	1.169,211	-2,0000	-2,0000
1+360,000			8.271.928,6683	801.736,7650	1.167,481	334°06'25"	1.169,799	-2,0000	-2,0000
1+380,000			8.271.937,4022	801.754,7572	1.168,254	334°06'25"	1.170,543	-2,0000	-2,0000
1+400,000			8.271.946,1360	801.772,7494	1.169,524	334°06'25"	1.171,442	-2,0000	-2,0000
1+420,000			8.271.954,8699	801.790,7416	1.171,077	334°06'25"	1.172,497	-2,0000	-2,0000
1+440,000			8.271.963,6038	801.808,7338	1.172,815	334°06'25"	1.173,708	-2,0000	-2,0000
1+460,000			8.271.972,3377	801.826,7260	1.174,628	334°06'25"	1.175,074	-2,0000	-2,0000
1+480,000		PTV7	8.271.981,0716	801.844,7182	1.176,458	334°06'25"	1.176,596	-2,0000	-2,0000
1+500,000			8.271.989,8055	801.862,7104	1.178,265	334°06'25"	1.178,196	-2,0000	-2,0000
1+520,000			8.271.998,5394	801.880,7026	1.180,072	334°06'25"	1.179,796	-2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
1+540,000		PCV8	8.272.007,2733	801.898,6948	1.181,817	334°06'25"	1.181,396	-2,0000	-2,0000
1+560,000			8.272.016,0072	801.916,6869	1.183,289	334°06'25"	1.182,946	-2,0000	-2,0000
1+580,000			8.272.024,7411	801.934,6791	1.184,458	334°06'25"	1.184,396	-2,0000	-2,0000
1+600,000			8.272.033,4750	801.952,6713	1.185,530	334°06'25"	1.185,746	-2,0000	-2,0000
1+620,000		PTV8	8.272.042,2089	801.970,6635	1.186,595	334°06'25"	1.186,996	-2,0000	-2,0000
1+640,000			8.272.050,9428	801.988,6557	1.187,712	334°06'25"	1.188,196	-2,0000	-2,0000
1+660,000			8.272.059,6766	802.006,6479	1.188,887	334°06'25"	1.189,396	-2,0000	-2,0000
1+680,000			8.272.068,4105	802.024,6401	1.189,979	334°06'25"	1.190,596	-2,0000	-2,0000
1+700,000			8.272.077,1444	802.042,6323	1.191,075	334°06'25"	1.191,796	-2,0000	-2,0000
1+720,000			8.272.085,8783	802.060,6245	1.192,235	334°06'25"	1.192,996	-2,0000	-2,0000
1+740,000			8.272.094,6122	802.078,6167	1.193,508	334°06'25"	1.194,196	-2,0000	-2,0000
1+760,000		PCV9	8.272.103,3461	802.096,6089	1.194,748	334°06'25"	1.195,396	-2,0000	-2,0000
1+780,000			8.272.112,0800	802.114,6011	1.195,982	334°06'25"	1.196,571	-2,0000	-2,0000
1+800,000			8.272.120,8139	802.132,5933	1.197,179	334°06'25"	1.197,696	-2,0000	-2,0000
1+820,000			8.272.129,5478	802.150,5855	1.198,298	334°06'25"	1.198,771	-2,0000	-2,0000
1+840,000			8.272.138,2817	802.168,5777	1.199,348	334°06'25"	1.199,795	-2,0000	-2,0000
1+860,000			8.272.147,0156	802.186,5699	1.200,346	334°06'25"	1.200,770	-2,0000	-2,0000
1+880,000			8.272.155,7495	802.204,5621	1.201,276	334°06'25"	1.201,695	-2,0000	-2,0000
1+900,000			8.272.164,4834	802.222,5543	1.202,163	334°06'25"	1.202,569	-2,0000	-2,0000
1+920,000			8.272.173,2172	802.240,5465	1.202,911	334°06'25"	1.203,393	-2,0000	-2,0000
1+940,000			8.272.181,9511	802.258,5387	1.203,619	334°06'25"	1.204,168	-2,0000	-2,0000
1+960,000		PTV9	8.272.190,6850	802.276,5309	1.204,336	334°06'25"	1.204,892	-2,0000	-2,0000
1+980,000			8.272.199,4189	802.294,5231	1.205,077	334°06'25"	1.205,591	-2,0000	-2,0000
2			8.272.208,1528	802.312,5153	1.205,782	334°06'25"	1.206,290	-2,0000	-2,0000
2+20,000			8.272.216,8867	802.330,5075	1.206,501	334°06'25"	1.206,989	-2,0000	-2,0000
2+33,644	PC2		8.272.222,8448	802.342,7813	1.207,013	334°06'25"	1.207,466	-2,0000	-2,0000
2+40,000			8.272.225,6190	802.348,5004	1.207,232	334°08'18"	1.207,689	-2,0000	-2,0000
2+60,000			8.272.234,3276	802.366,5049	1.207,912	334°14'13"	1.208,388	-2,0000	-2,0000
2+80,000			8.272.243,0050	802.384,5244	1.208,542	334°20'09"	1.209,087	-2,0000	-2,0000
2+100,000			8.272.251,6514	802.402,5588	1.209,265	334°26'04"	1.209,786	-2,0000	-2,0000
2+110,000		PCV10	8.272.255,9627	802.411,5812	1.209,638	334°29'02"	1.210,136	-2,0000	-2,0000
2+120,000			8.272.260,2667	802.420,6081	1.210,009	334°32'00"	1.210,484	-2,0000	-2,0000
2+140,000			8.272.268,8508	802.438,6722	1.210,749	334°37'56"	1.211,171	-2,0000	-2,0000
2+160,000			8.272.277,4038	802.456,7511	1.211,291	334°43'51"	1.211,846	-2,0000	-2,0000
2+180,000			8.272.285,9256	802.474,8448	1.211,908	334°49'47"	1.212,510	-2,0000	-2,0000
2+200,000			8.272.294,4162	802.492,9530	1.212,525	334°55'43"	1.213,162	-2,0000	-2,0000
2+220,000			8.272.302,8755	802.511,0759	1.213,121	335°01'38"	1.213,802	-2,0000	-2,0000
2+240,000			8.272.311,3036	802.529,2134	1.213,714	335°07'34"	1.214,430	-2,0000	-2,0000
2+260,000			8.272.319,7004	802.547,3653	1.214,382	335°13'30"	1.215,046	-2,0000	-2,0000
2+280,000			8.272.328,0659	802.565,5317	1.214,992	335°19'25"	1.215,650	-2,0000	-2,0000
2+300,000			8.272.336,4001	802.583,7125	1.215,537	335°25'21"	1.216,242	-2,0000	-2,0000
2+320,000			8.272.344,7029	802.601,9077	1.216,064	335°31'16"	1.216,823	-2,0000	-2,0000
2+340,000			8.272.352,9743	802.620,1171	1.216,636	335°37'12"	1.217,392	-2,0000	-2,0000
2+360,000			8.272.361,2144	802.638,3408	1.217,231	335°43'08"	1.217,949	-2,0000	-2,0000



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TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
2+380,000			8.272.369,4229	802.656,5786	1.217,760	335°49'03"	1.218,494	-2,0000	-2,0000
2+400,000			8.272.377,6001	802.674,8306	1.218,308	335°54'59"	1.219,027	-2,0000	-2,0000
2+420,000			8.272.385,7457	802.693,0966	1.218,841	336°00'55"	1.219,548	-2,0000	-2,0000
2+440,000			8.272.393,8599	802.711,3767	1.219,336	336°06'50"	1.220,057	-2,0000	-2,0000
2+460,000			8.272.401,9425	802.729,6707	1.219,772	336°12'46"	1.220,555	-2,0000	-2,0000
2+480,000			8.272.409,9935	802.747,9787	1.220,214	336°18'41"	1.221,040	-2,0000	-2,0000
2+500,000			8.272.418,0130	802.766,3004	1.220,637	336°24'37"	1.221,514	-2,0000	-2,0000
2+520,000			8.272.426,0009	802.784,6360	1.221,062	336°30'33"	1.221,976	-2,0000	-2,0000
2+540,000			8.272.433,9572	802.802,9853	1.221,495	336°36'28"	1.222,426	-2,0000	-2,0000
2+560,000			8.272.441,8818	802.821,3484	1.221,930	336°42'24"	1.222,865	-2,0000	-2,0000
2+570,000		PTV10	8.272.445,8320	802.830,5345	1.222,158	336°45'22"	1.223,079	-2,0000	-2,0000
2+580,000			8.272.449,7747	802.839,7250	1.222,417	336°48'20"	1.223,292	-2,0000	-2,0000
2+600,000			8.272.457,6359	802.858,1153	1.222,895	336°54'15"	1.223,719	-2,0000	-2,0000
2+620,000			8.272.465,4655	802.876,5190	1.223,502	337°00'11"	1.224,145	-2,0000	-2,0000
2+640,000			8.272.473,2632	802.894,9363	1.223,955	337°06'06"	1.224,572	-2,0000	-2,0000
2+660,000			8.272.481,0293	802.913,3669	1.224,447	337°12'02"	1.224,998	-2,0000	-2,0000
2+680,000			8.272.488,7635	802.931,8109	1.224,975	337°17'58"	1.225,424	-2,0000	-2,0000
2+700,000			8.272.496,4659	802.950,2682	1.225,484	337°23'53"	1.225,851	-2,0000	-2,0000
2+720,000			8.272.504,1365	802.968,7388	1.225,929	337°29'49"	1.226,277	-2,0000	-2,0000
2+740,000			8.272.511,7752	802.987,2226	1.226,622	337°35'45"	1.226,703	-2,0000	-2,0000
2+760,000			8.272.519,3820	803.005,7195	1.226,971	337°41'40"	1.227,130	-2,0000	-2,0000
2+780,000			8.272.526,9570	803.024,2295	1.227,322	337°47'36"	1.227,556	-2,0000	-2,0000
2+800,000			8.272.534,5000	803.042,7525	1.227,809	337°53'32"	1.227,983	-2,0000	-2,0000
2+820,000			8.272.542,0111	803.061,2886	1.228,311	337°59'27"	1.228,409	-2,0000	-2,0000
2+840,000			8.272.549,4902	803.079,8375	1.228,690	338°05'23"	1.228,835	-2,0000	-2,0000
2+860,000			8.272.556,9373	803.098,3993	1.229,182	338°11'18"	1.229,262	-2,0000	-2,0000
2+880,000			8.272.564,3524	803.116,9739	1.229,602	338°17'14"	1.229,688	-2,0000	-2,0000
2+900,000			8.272.571,7354	803.135,5613	1.229,895	338°23'10"	1.230,114	-2,0000	-2,0000
2+920,000			8.272.579,0864	803.154,1614	1.230,157	338°29'05"	1.230,541	-2,0000	-2,0000
2+940,000			8.272.586,4053	803.172,7741	1.230,529	338°35'01"	1.230,967	-2,0000	-2,0000
2+960,000			8.272.593,6922	803.191,3994	1.230,951	338°40'57"	1.231,393	-2,0000	-2,0000
2+980,000			8.272.600,9468	803.210,0372	1.231,282	338°46'52"	1.231,820	-2,0000	-2,0000
3			8.272.608,1694	803.228,6876	1.231,622	338°52'48"	1.232,246	-2,0000	-2,0000
3+20,000			8.272.615,3598	803.247,3503	1.231,991	338°58'43"	1.232,673	-2,0000	-2,0000
3+40,000			8.272.622,5180	803.266,0254	1.232,431	339°04'39"	1.233,099	-2,0000	-2,0000
3+60,000			8.272.629,6440	803.284,7129	1.232,869	339°10'35"	1.233,525	-2,0000	-2,0000
3+80,000			8.272.636,7377	803.303,4126	1.233,310	339°16'30"	1.233,952	-2,0000	-2,0000
3+100,000			8.272.643,7992	803.322,1245	1.233,774	339°22'26"	1.234,378	-2,0000	-2,0000
3+120,000			8.272.650,8284	803.340,8485	1.234,273	339°28'22"	1.234,804	-2,0000	-2,0000
3+140,000			8.272.657,8254	803.359,5846	1.234,727	339°34'17"	1.235,231	-2,0000	-2,0000
3+160,000			8.272.664,7900	803.378,3328	1.235,265	339°40'13"	1.235,657	-2,0000	-2,0000
3+180,000			8.272.671,7223	803.397,0930	1.235,768	339°46'08"	1.236,084	-2,0000	-2,0000
3+200,000		PCV11	8.272.678,6222	803.415,8650	1.236,175	339°52'04"	1.236,510	-2,0000	-2,0000
3+220,000			8.272.685,4898	803.434,6490	1.236,559	339°58'00"	1.236,940	-2,0000	-2,0000



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Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
3+240,000			8.272.692,3249	803.453,4447	1.236,974	340°03'55"	1.237,379	-2,0000	-2,0000
3+260,000			8.272.699,1277	803.472,2523	1.237,419	340°09'51"	1.237,826	-2,0000	-2,0000
3+280,000			8.272.705,8980	803.491,0715	1.237,906	340°15'47"	1.238,281	-2,0000	-2,0000
3+300,000			8.272.712,6358	803.509,9023	1.238,335	340°21'42"	1.238,745	-2,0000	-2,0000
3+320,000		PTV11	8.272.719,3412	803.528,7448	1.238,816	340°27'38"	1.239,216	-2,0000	-2,0000
3+340,000			8.272.726,0141	803.547,5988	1.239,321	340°33'33"	1.239,692	-2,0000	-2,0000
3+360,000			8.272.732,6544	803.566,4642	1.239,830	340°39'29"	1.240,168	-2,0000	-2,0000
3+380,000			8.272.739,2623	803.585,3411	1.240,376	340°45'25"	1.240,643	-2,0000	-2,0000
3+400,000			8.272.745,8375	803.604,2293	1.240,905	340°51'20"	1.241,119	-2,0000	-2,0000
3+420,000			8.272.752,3802	803.623,1289	1.241,238	340°57'16"	1.241,595	-2,0000	-2,0000
3+440,000			8.272.758,8903	803.642,0397	1.241,680	341°03'12"	1.242,071	-2,0000	-2,0000
3+460,000			8.272.765,3678	803.660,9617	1.242,180	341°09'07"	1.242,546	-2,0000	-2,0000
3+480,000			8.272.771,8126	803.679,8948	1.242,699	341°15'03"	1.243,022	-2,0000	-2,0000
3+500,000			8.272.778,2248	803.698,8391	1.243,223	341°20'59"	1.243,498	-2,0000	-2,0000
3+520,000			8.272.784,6044	803.717,7943	1.243,710	341°26'54"	1.243,974	-2,0000	-2,0000
3+540,000			8.272.790,9512	803.736,7605	1.244,184	341°32'50"	1.244,449	-2,0000	-2,0000
3+560,000			8.272.797,2653	803.755,7377	1.244,651	341°38'45"	1.244,925	-2,0000	-2,0000
3+580,000			8.272.803,5467	803.774,7257	1.245,123	341°44'41"	1.245,401	-2,0000	-2,0000
3+590,000		PCV12	8.272.806,6750	803.784,2233	1.245,351	341°47'39"	1.245,639	-2,0000	-2,0000
3+600,000			8.272.809,7954	803.793,7245	1.245,604	341°50'37"	1.245,874	-2,0000	-2,0000
3+620,000			8.272.816,0112	803.812,7340	1.246,078	341°56'32"	1.246,333	-2,0000	-2,0000
3+640,000			8.272.822,1943	803.831,7543	1.246,533	342°02'28"	1.246,774	-2,0000	-2,0000
3+660,000			8.272.828,3446	803.850,7851	1.246,941	342°08'24"	1.247,197	-2,0000	-2,0000
3+680,000			8.272.834,4621	803.869,8266	1.247,288	342°14'19"	1.247,603	-2,0000	-2,0000
3+700,000			8.272.840,5467	803.888,8785	1.247,701	342°20'15"	1.247,992	-2,0000	-2,0000
3+720,000			8.272.846,5985	803.907,9409	1.248,056	342°26'10"	1.248,364	-2,0000	-2,0000
3+740,000			8.272.852,6174	803.927,0138	1.248,401	342°32'06"	1.248,718	-2,0000	-2,0000
3+760,000			8.272.858,6034	803.946,0969	1.248,763	342°38'02"	1.249,054	-2,0000	-2,0000
3+780,000			8.272.864,5565	803.965,1904	1.249,145	342°43'57"	1.249,374	-2,0000	-2,0000
3+800,000			8.272.870,4767	803.984,2941	1.249,398	342°49'53"	1.249,675	-2,0000	-2,0000
3+820,000			8.272.876,3639	804.003,4080	1.249,638	342°55'49"	1.249,960	-2,0000	-2,0000
3+830,000		PTV12	8.272.879,2950	804.012,9683	1.249,745	342°58'46"	1.250,096	-2,0000	-2,0000
3+840,000			8.272.882,2182	804.022,5320	1.249,853	343°01'44"	1.250,229	-2,0000	-2,0000
3+860,000			8.272.888,0394	804.041,6661	1.249,990	343°07'40"	1.250,496	-2,0000	-2,0000
3+880,000			8.272.893,8277	804.060,8101	1.250,339	343°13'35"	1.250,764	-2,0000	-2,0000
3+900,000			8.272.899,5830	804.079,9642	1.250,660	343°19'31"	1.251,031	-2,0000	-2,0000
3+920,000			8.272.905,3052	804.099,1281	1.250,885	343°25'27"	1.251,298	-2,0000	-2,0000
3+940,000			8.272.910,9944	804.118,3019	1.251,267	343°31'22"	1.251,565	-2,0000	-2,0000
3+950,000		PCV13	8.272.913,8264	804.127,8919	1.251,431	343°34'20"	1.251,698	-2,0000	-2,0000
3+960,000			8.272.916,6505	804.137,4854	1.251,580	343°37'18"	1.251,834	-2,0000	-2,0000
3+980,000			8.272.922,2735	804.156,6787	1.251,808	343°43'14"	1.252,116	-2,0000	-2,0000
4			8.272.927,8635	804.175,8816	1.252,032	343°49'09"	1.252,412	-2,0000	-2,0000
4+20,000			8.272.933,4203	804.195,0941	1.252,293	343°55'05"	1.252,723	-2,0000	-2,0000
4+40,000			8.272.938,9440	804.214,3162	1.252,753	344°01'01"	1.253,049	-2,0000	-2,0000



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GREIDE + SUPERELEVAÇÃO

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Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
4+60,000			8.272.944,4345	804.233,5478	1.253,085	344°06'56"	1.253,389	-2,0000	-2,0000
4+80,000			8.272.949,8918	804.252,7888	1.253,404	344°12'52"	1.253,744	-2,0000	-2,0000
4+100,000			8.272.955,3160	804.272,0393	1.253,655	344°18'47"	1.254,114	-2,0000	-2,0000
4+120,000			8.272.960,7070	804.291,2990	1.254,076	344°24'43"	1.254,499	-2,0000	-2,0000
4+140,000			8.272.966,0648	804.310,5680	1.254,401	344°30'39"	1.254,898	-2,0000	-2,0000
4+150,000		PTV13	8.272.968,7311	804.320,2055	1.254,537	344°33'36"	1.255,103	-2,0000	-2,0000
4+160,000			8.272.971,3893	804.329,8462	1.254,718	344°36'34"	1.255,310	-2,0000	-2,0000
4+180,000			8.272.976,6806	804.349,1335	1.255,097	344°42'30"	1.255,724	-2,0000	-2,0000
4+200,000			8.272.981,9386	804.368,4300	1.255,522	344°48'26"	1.256,137	-2,0000	-2,0000
4+220,000			8.272.987,1634	804.387,7355	1.255,989	344°54'21"	1.256,551	-2,0000	-2,0000
4+240,000			8.272.992,3549	804.407,0499	1.256,492	345°00'17"	1.256,965	-2,0000	-2,0000
4+260,000			8.272.997,5130	804.426,3733	1.257,017	345°06'12"	1.257,379	-2,0000	-2,0000
4+280,000			8.273.002,6378	804.445,7056	1.257,456	345°12'08"	1.257,792	-2,0000	-2,0000
4+300,000			8.273.007,7293	804.465,0467	1.257,894	345°18'04"	1.258,206	-2,0000	-2,0000
4+320,000			8.273.012,7875	804.484,3965	1.258,330	345°23'59"	1.258,620	-2,0000	-2,0000
4+340,000			8.273.017,8122	804.503,7550	1.258,799	345°29'55"	1.259,034	-2,0000	-2,0000
4+360,000			8.273.022,8036	804.523,1221	1.259,144	345°35'51"	1.259,447	-2,0000	-2,0000
4+380,000			8.273.027,7616	804.542,4978	1.259,472	345°41'46"	1.259,861	-2,0000	-2,0000
4+400,000			8.273.032,6862	804.561,8821	1.259,875	345°47'42"	1.260,275	-2,0000	-2,0000
4+420,000			8.273.037,5773	804.581,2747	1.260,288	345°53'37"	1.260,689	-2,0000	-2,0000
4+440,000			8.273.042,4350	804.600,6758	1.260,709	345°59'33"	1.261,103	-2,0000	-2,0000
4+460,000			8.273.047,2592	804.620,0853	1.261,146	346°05'29"	1.261,516	-2,0000	-2,0000
4+480,000			8.273.052,0500	804.639,5030	1.261,559	346°11'24"	1.261,930	-2,0000	-2,0000
4+500,000			8.273.056,8073	804.658,9290	1.262,015	346°17'20"	1.262,344	-2,0000	-2,0000
4+520,000			8.273.061,5311	804.678,3631	1.262,431	346°23'16"	1.262,758	-2,0000	-2,0000
4+540,000			8.273.066,2213	804.697,8054	1.262,836	346°29'11"	1.263,171	-2,0000	-2,0000
4+560,000			8.273.070,8781	804.717,2557	1.263,194	346°35'07"	1.263,585	-2,0000	-2,0000
4+580,000			8.273.075,5013	804.736,7140	1.263,547	346°41'02"	1.263,999	-2,0000	-2,0000
4+600,000			8.273.080,0909	804.756,1803	1.264,125	346°46'58"	1.264,413	-2,0000	-2,0000
4+620,000			8.273.084,6470	804.775,6544	1.264,395	346°52'54"	1.264,827	-2,0000	-2,0000
4+640,000			8.273.089,1695	804.795,1364	1.264,717	346°58'49"	1.265,240	-2,0000	-2,0000
4+660,000			8.273.093,6584	804.814,6261	1.265,054	347°04'45"	1.265,654	-2,0000	-2,0000
4+680,000			8.273.098,1136	804.834,1236	1.265,490	347°10'41"	1.266,068	-2,0000	-2,0000
4+700,000			8.273.102,5353	804.853,6287	1.265,931	347°16'36"	1.266,482	-2,0000	-2,0000
4+720,000			8.273.106,9233	804.873,1413	1.266,340	347°22'32"	1.266,895	-2,0000	-2,0000
4+740,000			8.273.111,2777	804.892,6616	1.266,762	347°28'28"	1.267,309	-2,0000	-2,0000
4+760,000			8.273.115,5984	804.912,1893	1.267,170	347°34'23"	1.267,723	-2,0000	-2,0000
4+780,000			8.273.119,8855	804.931,7244	1.267,620	347°40'19"	1.268,137	-2,0000	-2,0000
4+800,000			8.273.124,1388	804.951,2669	1.268,064	347°46'14"	1.268,550	-2,0000	-2,0000
4+820,000			8.273.128,3585	804.970,8167	1.268,485	347°52'10"	1.268,964	-2,0000	-2,0000
4+840,000			8.273.132,5444	804.990,3737	1.268,874	347°58'06"	1.269,378	-2,0000	-2,0000
4+860,000			8.273.136,6966	805.009,9380	1.269,235	348°04'01"	1.269,792	-2,0000	-2,0000
4+880,000			8.273.140,8151	805.029,5093	1.269,641	348°09'57"	1.270,206	-2,0000	-2,0000
4+900,000			8.273.144,8998	805.049,0877	1.270,085	348°15'53"	1.270,619	-2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
4+920,000			8.273.148,9508	805.068,6732	1.270,508	348°21'48"	1.271,033	-2,0000	-2,0000
4+940,000			8.273.152,9680	805.088,2656	1.270,906	348°27'44"	1.271,447	-2,0000	-2,0000
4+960,000			8.273.156,9514	805.107,8649	1.271,288	348°33'39"	1.271,861	-2,0000	-2,0000
4+980,000			8.273.160,9010	805.127,4710	1.271,742	348°39'35"	1.272,274	-2,0000	-2,0000
5			8.273.164,8168	805.147,0839	1.272,205	348°45'31"	1.272,688	-2,0000	-2,0000
5+20,000			8.273.168,6988	805.166,7036	1.272,740	348°51'26"	1.273,102	-2,0000	-2,0000
5+40,000			8.273.172,5469	805.186,3299	1.273,152	348°57'22"	1.273,516	-2,0000	-2,0000
5+60,000			8.273.176,3612	805.205,9628	1.273,538	349°03'18"	1.273,929	-2,0000	-2,0000
5+80,000		PCV14	8.273.180,1416	805.225,6022	1.273,967	349°09'13"	1.274,343	-2,0000	-2,0000
5+100,000			8.273.183,8882	805.245,2482	1.274,445	349°15'09"	1.274,761	-2,0000	-2,0000
5+120,000			8.273.187,6009	805.264,9006	1.274,971	349°21'04"	1.275,187	-2,0000	-2,0000
5+140,000			8.273.191,2797	805.284,5593	1.275,403	349°27'00"	1.275,620	-2,0000	-2,0000
5+160,000			8.273.194,9246	805.304,2244	1.275,893	349°32'56"	1.276,062	-2,0000	-2,0000
5+180,000			8.273.198,5356	805.323,8957	1.276,372	349°38'51"	1.276,511	-2,0000	-2,0000
5+200,000			8.273.202,1127	805.343,5732	1.276,758	349°44'47"	1.276,969	-2,0000	-2,0000
5+220,000			8.273.205,6558	805.363,2568	1.277,015	349°50'43"	1.277,434	-2,0000	-2,0000
5+240,000			8.273.209,1651	805.382,9466	1.277,625	349°56'38"	1.277,907	-2,0000	-2,0000
5+260,000			8.273.212,6403	805.402,6423	1.278,178	350°02'34"	1.278,389	-2,0000	-2,0000
5+280,000			8.273.216,0816	805.422,3440	1.278,636	350°08'29"	1.278,878	-2,0000	-2,0000
5+300,000		PTV14	8.273.219,4889	805.442,0516	1.279,141	350°14'25"	1.279,375	-2,0000	-2,0000
5+320,000			8.273.222,8622	805.461,7651	1.279,549	350°20'21"	1.279,876	-2,0000	-2,0000
5+340,000			8.273.226,2016	805.481,4843	1.280,040	350°26'16"	1.280,377	-2,0000	-2,0000
5+342,600			8.273.226,6331	805.484,0478	1.280,108	350°27'03"	1.280,442	-2,0000	-2,0000
5+360,000			8.273.229,5069	805.501,2093	1.280,543	350°32'12"	1.280,878	-2,0000	-2,0000
5+380,000			8.273.232,7782	805.520,9400	1.280,988	350°38'08"	1.281,379	-2,0000	-2,0000
5+400,000			8.273.236,0155	805.540,6762	1.281,497	350°44'03"	1.281,880	-2,0000	-2,0000
5+420,000			8.273.239,2188	805.560,4180	1.281,951	350°49'59"	1.282,381	-2,0000	-2,0000
5+440,000			8.273.242,3880	805.580,1653	1.282,501	350°55'55"	1.282,882	-2,0000	-2,0000
5+460,000			8.273.245,5232	805.599,9181	1.283,054	351°01'50"	1.283,383	-2,0000	-2,0000
5+480,000			8.273.248,6243	805.619,6762	1.283,553	351°07'46"	1.283,884	-2,0000	-2,0000
5+500,000			8.273.251,6913	805.639,4396	1.284,072	351°13'41"	1.284,385	-2,0000	-2,0000
5+519,571			8.273.254,6595	805.658,7837	1.284,581	351°19'29"	1.284,876	-2,0000	-2,0000
5+520,000		PCV15	8.273.254,7243	805.659,2083	1.284,591	351°19'37"	1.284,886	-2,0000	-2,0000
5+540,000			8.273.257,7231	805.678,9822	1.285,049	351°25'33"	1.285,382	-2,0000	-2,0000
5+560,000			8.273.260,6879	805.698,7612	1.285,528	351°31'28"	1.285,866	-2,0000	-2,0000
5+580,000			8.273.263,6186	805.718,5453	1.285,983	351°37'24"	1.286,339	-2,0000	-2,0000
5+600,000			8.273.266,5151	805.738,3345	1.286,433	351°43'20"	1.286,800	-2,0000	-2,0000
5+620,000			8.273.269,3775	805.758,1286	1.286,853	351°49'15"	1.287,250	-2,0000	-2,0000
5+637,399	PT2		8.273.271,8400	805.775,3524	1.287,287	351°54'25"	1.287,633	-2,0000	-2,0000
5+640,000			8.273.272,2061	805.777,9275	1.287,354	351°54'25"	1.287,689	-2,0000	-2,0000
5+660,000			8.273.275,0218	805.797,7284	1.287,761	351°54'25"	1.288,116	-2,0000	-2,0000
5+680,000			8.273.277,8375	805.817,5292	1.288,145	351°54'25"	1.288,533	-2,0000	-2,0000
5+700,000			8.273.280,6531	805.837,3300	1.288,539	351°54'25"	1.288,937	-2,0000	-2,0000
5+720,000			8.273.283,4688	805.857,1308	1.288,927	351°54'25"	1.289,331	-2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
5+740,000			8.273.286,2845	805.876,9316	1.289,306	351°54'25"	1.289,713	-2,0000	-2,0000
5+760,000			8.273.289,1001	805.896,7324	1.289,817	351°54'25"	1.290,084	-2,0000	-2,0000
5+780,000			8.273.291,9158	805.916,5332	1.290,189	351°54'25"	1.290,444	-2,0000	-2,0000
5+800,000			8.273.294,7315	805.936,3340	1.290,479	351°54'25"	1.290,792	-2,0000	-2,0000
5+820,000			8.273.297,5471	805.956,1348	1.290,726	351°54'25"	1.291,129	-2,0000	-2,0000
5+840,000			8.273.300,3628	805.975,9356	1.291,041	351°54'25"	1.291,455	-2,0000	-2,0000
5+860,000			8.273.303,1785	805.995,7364	1.291,378	351°54'25"	1.291,769	-2,0000	-2,0000
5+880,000			8.273.305,9941	806.015,5372	1.291,716	351°54'25"	1.292,072	-2,0000	-2,0000
5+900,000			8.273.308,8098	806.035,3381	1.292,037	351°54'25"	1.292,364	-2,0000	-2,0000
5+920,000			8.273.311,6255	806.055,1389	1.292,390	351°54'25"	1.292,644	-2,0000	-2,0000
5+940,000			8.273.314,4411	806.074,9397	1.292,611	351°54'25"	1.292,913	-2,0000	-2,0000
5+960,000			8.273.317,2568	806.094,7405	1.292,804	351°54'25"	1.293,171	-2,0000	-2,0000
5+980,000			8.273.320,0725	806.114,5413	1.293,025	351°54'25"	1.293,417	-2,0000	-2,0000
6			8.273.322,8881	806.134,3421	1.293,274	351°54'25"	1.293,652	-2,0000	-2,0000
6+20,000			8.273.325,7038	806.154,1429	1.293,491	351°54'25"	1.293,876	-2,0000	-2,0000
6+40,000		PTV15	8.273.328,5195	806.173,9437	1.293,751	351°54'25"	1.294,089	-2,0000	-2,0000
6+60,000			8.273.331,3351	806.193,7445	1.293,981	351°54'25"	1.294,296	-2,0000	-2,0000
6+80,000			8.273.334,1508	806.213,5453	1.294,217	351°54'25"	1.294,502	-2,0000	-2,0000
6+100,000			8.273.336,9665	806.233,3461	1.294,436	351°54'25"	1.294,709	-2,0000	-2,0000
6+107,060			8.273.337,9604	806.240,3358	1.294,514	351°54'25"	1.294,782	-2,0000	-2,0000
6+120,000			8.273.339,7821	806.253,1470	1.294,656	351°54'25"	1.294,916	-2,0000	-2,0000
6+140,000		PCV16	8.273.342,5978	806.272,9478	1.294,864	351°54'25"	1.295,123	-2,0000	-2,0000
6+144,560			8.273.343,2398	806.277,4623	1.294,894	351°54'25"	1.295,171	-2,0000	-2,0000
6+160,000			8.273.345,4134	806.292,7486	1.295,035	351°54'25"	1.295,340	-2,0000	-2,0000
6+167,060			8.273.346,4074	806.299,7383	1.295,110	351°54'25"	1.295,422	-2,0000	-2,0000
6+180,000			8.273.348,2291	806.312,5494	1.295,248	351°54'25"	1.295,579	-2,0000	-2,0000
6+196,964			8.273.350,6174	806.329,3444	1.295,384	351°54'25"	1.295,798	-2,0000	-2,0000
6+200,000			8.273.351,0448	806.332,3502	1.295,406	351°54'25"	1.295,839	-2,0000	-2,0000
6+219,464			8.273.353,7850	806.351,6203	1.295,580	351°54'25"	1.296,113	-2,0000	-2,0000
6+220,000			8.273.353,8604	806.352,1510	1.295,586	351°54'25"	1.296,121	-2,0000	-2,0000
6+240,000			8.273.356,6761	806.371,9518	1.295,799	351°54'25"	1.296,424	-2,0000	-2,0000
6+256,964			8.273.359,0644	806.388,7469	1.295,990	351°54'25"	1.296,697	-2,0000	-2,0000
6+260,000			8.273.359,4918	806.391,7526	1.296,025	351°54'25"	1.296,748	-2,0000	-2,0000
6+280,000			8.273.362,3074	806.411,5534	1.296,311	351°54'25"	1.297,093	-2,0000	-2,0000
6+300,000			8.273.365,1231	806.431,3542	1.296,733	351°54'25"	1.297,460	-2,0000	-2,0000
6+320,000			8.273.367,9388	806.451,1550	1.297,139	351°54'25"	1.297,848	-2,0000	-2,0000
6+340,000		PTV16	8.273.370,7544	806.470,9558	1.297,571	351°54'25"	1.298,257	-2,0000	-2,0000
6+360,000			8.273.373,5701	806.490,7567	1.298,087	351°54'25"	1.298,677	-2,0000	-2,0000
6+380,000			8.273.376,3858	806.510,5575	1.298,665	351°54'25"	1.299,097	-2,0000	-2,0000
6+400,000			8.273.379,2014	806.530,3583	1.299,180	351°54'25"	1.299,517	-2,0000	-2,0000
6+420,000			8.273.382,0171	806.550,1591	1.299,638	351°54'25"	1.299,937	-2,0000	-2,0000
6+440,000			8.273.384,8328	806.569,9599	1.300,001	351°54'25"	1.300,358	-2,0000	-2,0000
6+460,000			8.273.387,6484	806.589,7607	1.300,435	351°54'25"	1.300,778	-2,0000	-2,0000
6+480,000			8.273.390,4641	806.609,5615	1.300,869	351°54'25"	1.301,198	-2,0000	-2,0000





RODOVIA: DF-220

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GREIDE + SUPERELEVÇÃO

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Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
6+500,000			8.273.393,2798	806.629,3623	1.301,282	351°54'25"	1.301,618	-2,0000	-2,0000
6+520,000			8.273.396,0954	806.649,1631	1.301,688	351°54'25"	1.302,038	-2,0000	-2,0000
6+540,000			8.273.398,9111	806.668,9639	1.302,018	351°54'25"	1.302,458	-2,0000	-2,0000
6+560,000			8.273.401,7268	806.688,7647	1.302,393	351°54'25"	1.302,878	-2,0000	-2,0000
6+580,000			8.273.404,5424	806.708,5656	1.302,749	351°54'25"	1.303,298	-2,0000	-2,0000
6+600,000			8.273.407,3581	806.728,3664	1.303,125	351°54'25"	1.303,718	-2,0000	-2,0000
6+620,000			8.273.410,1738	806.748,1672	1.303,500	351°54'25"	1.304,138	-2,0000	-2,0000
6+640,000			8.273.412,9894	806.767,9680	1.303,864	351°54'25"	1.304,558	-2,0000	-2,0000
6+660,000			8.273.415,8051	806.787,7688	1.304,224	351°54'25"	1.304,978	-2,0000	-2,0000
6+680,000			8.273.418,6208	806.807,5696	1.304,687	351°54'25"	1.305,398	-2,0000	-2,0000
6+700,000			8.273.421,4364	806.827,3704	1.305,109	351°54'25"	1.305,818	-2,0000	-2,0000
6+720,000			8.273.424,2521	806.847,1712	1.305,567	351°54'25"	1.306,238	-2,0000	-2,0000
6+740,000			8.273.427,0678	806.866,9720	1.305,989	351°54'25"	1.306,658	-2,0000	-2,0000
6+760,000			8.273.429,8834	806.886,7728	1.306,386	351°54'25"	1.307,078	-2,0000	-2,0000
6+780,000			8.273.432,6991	806.906,5736	1.306,812	351°54'25"	1.307,498	-2,0000	-2,0000
6+800,000			8.273.435,5148	806.926,3744	1.307,340	351°54'25"	1.307,919	-2,0000	-2,0000
6+820,000			8.273.438,3304	806.946,1753	1.307,879	351°54'25"	1.308,339	-2,0000	-2,0000
6+840,000			8.273.441,1461	806.965,9761	1.308,454	351°54'25"	1.308,759	-2,0000	-2,0000
6+860,000			8.273.443,9618	806.985,7769	1.308,982	351°54'25"	1.309,179	-2,0000	-2,0000
6+880,000			8.273.446,7774	807.005,5777	1.309,482	351°54'25"	1.309,599	-2,0000	-2,0000
6+900,000			8.273.449,5931	807.025,3785	1.309,995	351°54'25"	1.310,019	-2,0000	-2,0000
6+920,000			8.273.452,4088	807.045,1793	1.310,430	351°54'25"	1.310,439	-2,0000	-2,0000
6+940,000			8.273.455,2244	807.064,9801	1.310,819	351°54'25"	1.310,859	-2,0000	-2,0000
6+960,000			8.273.458,0401	807.084,7809	1.311,220	351°54'25"	1.311,279	-2,0000	-2,0000
6+980,000			8.273.460,8558	807.104,5817	1.311,573	351°54'25"	1.311,699	-2,0000	-2,0000
7			8.273.463,6714	807.124,3825	1.311,870	351°54'25"	1.312,119	-2,0000	-2,0000
7+20,000			8.273.466,4871	807.144,1833	1.312,159	351°54'25"	1.312,539	-2,0000	-2,0000
7+40,000			8.273.469,3028	807.163,9842	1.312,471	351°54'25"	1.312,959	-2,0000	-2,0000
7+60,000			8.273.472,1184	807.183,7850	1.312,867	351°54'25"	1.313,379	-2,0000	-2,0000
7+80,000			8.273.474,9341	807.203,5858	1.313,223	351°54'25"	1.313,799	-2,0000	-2,0000
7+100,000			8.273.477,7498	807.223,3866	1.313,529	351°54'25"	1.314,219	-2,0000	-2,0000
7+120,000			8.273.480,5654	807.243,1874	1.313,861	351°54'25"	1.314,639	-2,0000	-2,0000
7+140,000			8.273.483,3811	807.262,9882	1.314,210	351°54'25"	1.315,059	-2,0000	-2,0000
7+160,000			8.273.486,1968	807.282,7890	1.314,573	351°54'25"	1.315,480	-2,0000	-2,0000
7+180,000			8.273.489,0124	807.302,5898	1.314,950	351°54'25"	1.315,900	-2,0000	-2,0000
7+200,000			8.273.491,8281	807.322,3906	1.315,428	351°54'25"	1.316,320	-2,0000	-2,0000
7+220,000			8.273.494,6438	807.342,1914	1.315,959	351°54'25"	1.316,740	-2,0000	-2,0000
7+240,000			8.273.497,4594	807.361,9922	1.316,432	351°54'25"	1.317,160	-2,0000	-2,0000
7+260,000			8.273.500,2751	807.381,7930	1.316,893	351°54'25"	1.317,580	-2,0000	-2,0000
7+280,000			8.273.503,0908	807.401,5939	1.317,346	351°54'25"	1.318,000	-2,0000	-2,0000
7+300,000			8.273.505,9064	807.421,3947	1.317,730	351°54'25"	1.318,420	-2,0000	-2,0000
7+320,000			8.273.508,7221	807.441,1955	1.318,251	351°54'25"	1.318,840	-2,0000	-2,0000
7+340,000			8.273.511,5377	807.460,9963	1.318,930	351°54'25"	1.319,260	-2,0000	-2,0000
7+360,000			8.273.514,3534	807.480,7971	1.319,164	351°54'25"	1.319,680	-2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
7+380,000			8.273.517,1691	807.500,5979	1.319,422	351°54'25"	1.320,100	-2,0000	-2,0000
7+382,740			8.273.517,5548	807.503,3106	1.319,461	351°54'25"	1.320,158	-2,0000	-2,0000
7+400,000			8.273.519,9847	807.520,3987	1.319,795	351°54'25"	1.320,520	-2,0000	-2,0000
7+420,000			8.273.522,8004	807.540,1995	1.320,221	351°54'25"	1.320,940	-2,0000	-2,0000
7+421,548			8.273.523,0183	807.541,7321	1.320,246	351°54'25"	1.320,973	-2,0000	-2,0000
7+440,000			8.273.525,6161	807.560,0003	1.320,549	351°54'25"	1.321,360	-2,0000	-2,0000
7+452,595			8.273.527,3892	807.572,4699	1.320,863	351°54'25"	1.321,625	-2,0000	-2,0000
7+460,000			8.273.528,4317	807.579,8011	1.321,058	351°54'25"	1.321,780	-2,0000	-2,0000
7+461,548			8.273.528,6497	807.581,3337	1.321,099	351°54'25"	1.321,813	-2,0000	-2,0000
7+480,000			8.273.531,2474	807.599,6019	1.321,583	351°54'25"	1.322,200	-2,0000	-2,0000
7+492,595			8.273.533,0206	807.612,0715	1.321,900	351°54'25"	1.322,465	-2,0000	-2,0000
7+500,000			8.273.534,0631	807.619,4028	1.322,074	351°54'25"	1.322,620	-2,0000	-2,0000
7+518,645			8.273.536,6880	807.637,8621	1.322,512	351°54'25"	1.323,012	-2,0000	-2,0000
7+520,000			8.273.536,8787	807.639,2036	1.322,544	351°54'25"	1.323,041	-2,0000	-2,0000
7+523,975			8.273.537,4384	807.643,1390	1.322,639	351°54'25"	1.323,124	-2,0000	-2,0000
7+534,138			8.273.538,8691	807.653,2008	1.322,882	351°54'25"	1.323,337	-2,0000	-2,0000
7+538,051			8.273.539,4200	807.657,0748	1.322,976	351°54'25"	1.323,420	-2,0000	-2,0000
7+540,000			8.273.539,6944	807.659,0044	1.323,022	351°54'25"	1.323,461	-2,0000	-2,0000
7+546,261			8.273.540,5759	807.665,2030	1.323,235	351°54'25"	1.323,592	-2,0000	-2,0000
7+557,472			8.273.542,1542	807.676,3024	1.323,603	351°54'25"	1.323,828	-2,0000	-2,0000
7+560,000			8.273.542,5101	807.678,8052	1.323,686	351°54'25"	1.323,881	-2,0000	-2,0000
7+579,595			8.273.545,2687	807.698,2050	1.324,221	351°54'25"	1.324,292	-2,0000	-2,0000
7+580,000			8.273.545,3257	807.698,6060	1.324,231	351°54'25"	1.324,301	-2,0000	-2,0000
7+600,000			8.273.548,1414	807.718,4068	1.324,726	351°54'25"	1.324,721	-2,0000	-2,0000
7+610,641			8.273.549,6395	807.728,9418	1.325,018	351°54'25"	1.324,944	-2,0000	-2,0000
7+619,595			8.273.550,9001	807.737,8066	1.325,249	351°54'25"	1.325,132	-2,0000	-2,0000
7+620,000			8.273.550,9571	807.738,2076	1.325,257	351°54'25"	1.325,141	-2,0000	-2,0000
7+640,000			8.273.553,7727	807.758,0084	1.325,661	351°54'25"	1.325,561	-2,0000	-2,0000
7+650,642			8.273.555,2710	807.768,5444	1.325,849	351°54'25"	1.325,784	-2,0000	-2,0000
7+660,000			8.273.556,5884	807.777,8092	1.326,004	351°54'25"	1.325,981	-2,0000	-2,0000
7+680,000			8.273.559,4041	807.797,6100	1.326,365	351°54'25"	1.326,401	-2,0000	-2,0000
7+689,450			8.273.560,7345	807.806,9659	1.326,538	351°54'25"	1.326,599	-2,0000	-2,0000
7+700,000			8.273.562,2197	807.817,4108	1.326,726	351°54'25"	1.326,821	-2,0000	-2,0000
7+720,000			8.273.565,0354	807.837,2116	1.327,400	351°54'25"	1.327,241	-2,0000	-2,0000
7+740,000			8.273.567,8511	807.857,0125	1.327,630	351°54'25"	1.327,661	-2,0000	-2,0000
7+760,000			8.273.570,6667	807.876,8133	1.327,950	351°54'25"	1.328,081	-2,0000	-2,0000
7+780,000			8.273.573,4824	807.896,6141	1.328,416	351°54'25"	1.328,501	-2,0000	-2,0000
7+800,000			8.273.576,2981	807.916,4149	1.328,779	351°54'25"	1.328,921	-2,0000	-2,0000
7+820,000			8.273.579,1137	807.936,2157	1.329,192	351°54'25"	1.329,341	-2,0000	-2,0000
7+840,000			8.273.581,9294	807.956,0165	1.329,603	351°54'25"	1.329,761	-2,0000	-2,0000
7+860,000			8.273.584,7451	807.975,8173	1.330,018	351°54'25"	1.330,181	-2,0000	-2,0000
7+880,000			8.273.587,5607	807.995,6181	1.330,408	351°54'25"	1.330,602	-2,0000	-2,0000
7+900,000			8.273.590,3764	808.015,4189	1.330,790	351°54'25"	1.331,022	-2,0000	-2,0000
7+910,000		PCV17	8.273.591,7842	808.025,3193	1.330,972	351°54'25"	1.331,232	-2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
7+920,000			8.273.593,1921	808.035,2197	1.331,149	351°54'25"	1.331,439	-2,0000	-2,0000
7+940,000			8.273.596,0077	808.055,0205	1.331,501	351°54'25"	1.331,841	-2,0000	-2,0000
7+960,000			8.273.598,8234	808.074,8214	1.331,818	351°54'25"	1.332,224	-2,0000	-2,0000
7+980,000			8.273.601,6391	808.094,6222	1.332,130	351°54'25"	1.332,588	-2,0000	-2,0000
8			8.273.604,4547	808.114,4230	1.332,450	351°54'25"	1.332,934	-2,0000	-2,0000
8+20,000			8.273.607,2704	808.134,2238	1.332,758	351°54'25"	1.333,261	-2,0000	-2,0000
8+40,000			8.273.610,0861	808.154,0246	1.333,049	351°54'25"	1.333,569	-2,0000	-2,0000
8+60,000			8.273.612,9017	808.173,8254	1.333,316	351°54'25"	1.333,859	-2,0000	-2,0000
8+80,000			8.273.615,7174	808.193,6262	1.333,526	351°54'25"	1.334,131	-2,0000	-2,0000
8+100,000			8.273.618,5331	808.213,4270	1.333,708	351°54'25"	1.334,383	-2,0000	-2,0000
8+120,000			8.273.621,3487	808.233,2278	1.333,932	351°54'25"	1.334,618	-2,0000	-2,0000
8+140,000			8.273.624,1644	808.253,0286	1.334,114	351°54'25"	1.334,833	-2,0000	-2,0000
8+160,000			8.273.626,9801	808.272,8294	1.334,308	351°54'25"	1.335,030	-2,0000	-2,0000
8+180,000			8.273.629,7957	808.292,6302	1.334,409	351°54'25"	1.335,209	-2,0000	-2,0000
8+200,000			8.273.632,6114	808.312,4311	1.334,595	351°54'25"	1.335,369	-2,0000	-2,0000
8+210,000		PTV17	8.273.634,0192	808.322,3315	1.334,687	351°54'25"	1.335,442	-2,0000	-2,0000
8+220,000			8.273.635,4271	808.332,2319	1.334,767	351°54'25"	1.335,512	-2,0000	-2,0000
8+240,000			8.273.638,2427	808.352,0327	1.334,971	351°54'25"	1.335,654	-2,0000	-2,0000
8+260,000			8.273.641,0584	808.371,8335	1.335,192	351°54'25"	1.335,795	-2,0000	-2,0000
8+280,000			8.273.643,8741	808.391,6343	1.335,356	351°54'25"	1.335,936	-2,0000	-2,0000
8+300,000			8.273.646,6897	808.411,4351	1.335,023	351°54'25"	1.336,078	-2,0000	-2,0000
8+320,000			8.273.649,5054	808.431,2359	1.334,845	351°54'25"	1.336,219	-2,0000	-2,0000
8+340,000			8.273.652,3211	808.451,0367	1.334,950	351°54'25"	1.336,360	-2,0000	-2,0000
8+360,000			8.273.655,1367	808.470,8375	1.335,128	351°54'25"	1.336,501	-2,0000	-2,0000
8+380,000			8.273.657,9524	808.490,6383	1.335,298	351°54'25"	1.336,643	-2,0000	-2,0000
8+400,000			8.273.660,7681	808.510,4391	1.335,677	351°54'25"	1.336,784	-2,0000	-2,0000
8+420,000			8.273.663,5837	808.530,2400	1.336,533	351°54'25"	1.336,925	-2,0000	-2,0000
8+440,000		PCV18	8.273.666,3994	808.550,0408	1.336,858	351°54'25"	1.337,067	-2,0000	-2,0000
8+460,000			8.273.669,2151	808.569,8416	1.337,011	351°54'25"	1.337,196	-2,0000	-2,0000
8+480,000			8.273.672,0307	808.589,6424	1.337,094	351°54'25"	1.337,301	-2,0000	-2,0000
8+500,000			8.273.674,8464	808.609,4432	1.337,128	351°54'25"	1.337,382	-2,0000	-2,0000
8+520,000			8.273.677,6621	808.629,2440	1.337,216	351°54'25"	1.337,438	-2,0000	-2,0000
8+540,000			8.273.680,4777	808.649,0448	1.337,277	351°54'25"	1.337,471	-2,0000	-2,0000
8+560,000			8.273.683,2934	808.668,8456	1.337,221	351°54'25"	1.337,479	-2,0000	-2,0000
8+580,000			8.273.686,1090	808.688,6464	1.337,193	351°54'25"	1.337,463	-2,0000	-2,0000
8+600,000			8.273.688,9247	808.708,4472	1.337,244	351°54'25"	1.337,423	-2,0000	-2,0000
8+620,000			8.273.691,7404	808.728,2480	1.337,059	351°54'25"	1.337,359	-2,0000	-2,0000
8+640,000		PTV18	8.273.694,5560	808.748,0488	1.336,963	351°54'25"	1.337,270	-2,0000	-2,0000
8+660,000			8.273.697,3717	808.767,8497	1.336,859	351°54'25"	1.337,170	-2,0000	-2,0000
8+680,000			8.273.700,1874	808.787,6505	1.336,731	351°54'25"	1.337,069	-2,0000	-2,0000
8+700,000			8.273.703,0030	808.807,4513	1.336,747	351°54'25"	1.336,969	-2,0000	-2,0000
8+720,000			8.273.705,8187	808.827,2521	1.336,684	351°54'25"	1.336,868	-2,0000	-2,0000
8+740,000			8.273.708,6344	808.847,0529	1.336,502	351°54'25"	1.336,767	-2,0000	-2,0000
8+760,000			8.273.711,4500	808.866,8537	1.336,341	351°54'25"	1.336,667	-2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVÇÃO

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Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
8+780,000			8.273.714,2657	808.886,6545	1.336,279	351°54'25"	1.336,566	-2,0000	-2,0000
8+800,000			8.273.717,0814	808.906,4553	1.336,150	351°54'25"	1.336,466	-2,0000	-2,0000
8+820,000			8.273.719,8970	808.926,2561	1.336,067	351°54'25"	1.336,365	-2,0000	-2,0000
8+840,000			8.273.722,7127	808.946,0569	1.335,947	351°54'25"	1.336,265	-2,0000	-2,0000
8+860,000			8.273.725,5284	808.965,8577	1.335,845	351°54'25"	1.336,164	-2,0000	-2,0000
8+880,000			8.273.728,3440	808.985,6586	1.335,786	351°54'25"	1.336,064	-2,0000	-2,0000
8+900,000			8.273.731,1597	809.005,4594	1.335,664	351°54'25"	1.335,963	-2,0000	-2,0000
8+920,000			8.273.733,9754	809.025,2602	1.335,566	351°54'25"	1.335,862	-2,0000	-2,0000
8+940,000		PCV19	8.273.736,7910	809.045,0610	1.335,527	351°54'25"	1.335,762	-2,0000	-2,0000
8+960,000			8.273.739,6067	809.064,8618	1.335,374	351°54'25"	1.335,649	-2,0000	-2,0000
8+980,000			8.273.742,4224	809.084,6626	1.335,187	351°54'25"	1.335,511	-2,0000	-2,0000
9			8.273.745,2380	809.104,4634	1.334,981	351°54'25"	1.335,347	-2,0000	-2,0000
9+20,000			8.273.748,0537	809.124,2642	1.334,779	351°54'25"	1.335,159	-2,0000	-2,0000
9+40,000			8.273.750,8694	809.144,0650	1.334,590	351°54'25"	1.334,945	-2,0000	-2,0000
9+60,000			8.273.753,6850	809.163,8658	1.334,331	351°54'25"	1.334,707	-2,0000	-2,0000
9+80,000			8.273.756,5007	809.183,6666	1.334,025	351°54'25"	1.334,443	-2,0000	-2,0000
9+100,000			8.273.759,3164	809.203,4674	1.333,735	351°54'25"	1.334,154	-2,0000	-2,0000
9+120,000			8.273.762,1320	809.223,2683	1.333,437	351°54'25"	1.333,841	-2,0000	-2,0000
9+140,000			8.273.764,9477	809.243,0691	1.333,127	351°54'25"	1.333,502	-2,0000	-2,0000
9+160,000			8.273.767,7634	809.262,8699	1.332,749	351°54'25"	1.333,138	-2,0000	-2,0000
9+180,000			8.273.770,5790	809.282,6707	1.332,299	351°54'25"	1.332,748	-2,0000	-2,0000
9+200,000			8.273.773,3947	809.302,4715	1.331,974	351°54'25"	1.332,334	-2,0000	-2,0000
9+220,000		PTV19	8.273.776,2104	809.322,2723	1.331,594	351°54'25"	1.331,895	-2,0000	-2,0000
9+240,000			8.273.779,0260	809.342,0731	1.331,146	351°54'25"	1.331,443	-2,0000	-2,0000
9+260,000			8.273.781,8417	809.361,8739	1.330,688	351°54'25"	1.330,991	-2,0000	-2,0000
9+280,000			8.273.784,6574	809.381,6747	1.330,267	351°54'25"	1.330,539	-2,0000	-2,0000
9+300,000			8.273.787,4730	809.401,4755	1.329,876	351°54'25"	1.330,087	-2,0000	-2,0000
9+320,000			8.273.790,2887	809.421,2763	1.329,522	351°54'25"	1.329,636	-2,0000	-2,0000
9+340,000			8.273.793,1044	809.441,0772	1.328,928	351°54'25"	1.329,184	-2,0000	-2,0000
9+360,000			8.273.795,9200	809.460,8780	1.328,544	351°54'25"	1.328,732	-2,0000	-2,0000
9+380,000			8.273.798,7357	809.480,6788	1.328,028	351°54'25"	1.328,280	-2,0000	-2,0000
9+400,000			8.273.801,5514	809.500,4796	1.327,607	351°54'25"	1.327,828	-2,0000	-2,0000
9+420,000			8.273.804,3670	809.520,2804	1.327,166	351°54'25"	1.327,376	-2,0000	-2,0000
9+440,000			8.273.807,1827	809.540,0812	1.326,720	351°54'25"	1.326,924	-2,0000	-2,0000
9+460,000			8.273.809,9984	809.559,8820	1.326,319	351°54'25"	1.326,472	-2,0000	-2,0000
9+480,000			8.273.812,8140	809.579,6828	1.325,848	351°54'25"	1.326,021	-2,0000	-2,0000
9+500,000			8.273.815,6297	809.599,4836	1.325,349	351°54'25"	1.325,569	-2,0000	-2,0000
9+520,000			8.273.818,4454	809.619,2844	1.324,885	351°54'25"	1.325,117	-2,0000	-2,0000
9+540,000			8.273.821,2610	809.639,0852	1.324,398	351°54'25"	1.324,665	-2,0000	-2,0000
9+560,000			8.273.824,0767	809.658,8860	1.323,798	351°54'25"	1.324,213	-2,0000	-2,0000
9+580,000			8.273.826,8924	809.678,6869	1.323,455	351°54'25"	1.323,761	-2,0000	-2,0000
9+600,000			8.273.829,7080	809.698,4877	1.323,038	351°54'25"	1.323,309	-2,0000	-2,0000
9+620,000			8.273.832,5237	809.718,2885	1.322,607	351°54'25"	1.322,857	-2,0000	-2,0000
9+640,000			8.273.835,3394	809.738,0893	1.322,166	351°54'25"	1.322,406	-2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
9+660,000			8.273.838,1550	809.757,8901	1.321,668	351°54'25"	1.321,954	-2,0000	-2,0000
9+680,000			8.273.840,9707	809.777,6909	1.321,217	351°54'25"	1.321,502	-2,0000	-2,0000
9+700,000			8.273.843,7864	809.797,4917	1.320,795	351°54'25"	1.321,050	-2,0000	-2,0000
9+720,000			8.273.846,6020	809.817,2925	1.320,334	351°54'25"	1.320,598	-2,0000	-2,0000
9+740,000			8.273.849,4177	809.837,0933	1.319,854	351°54'25"	1.320,146	-2,0000	-2,0000
9+760,000			8.273.852,2333	809.856,8941	1.319,423	351°54'25"	1.319,694	-2,0000	-2,0000
9+780,000			8.273.855,0490	809.876,6949	1.319,064	351°54'25"	1.319,242	-2,0000	-2,0000
9+800,000			8.273.857,8647	809.896,4958	1.318,571	351°54'25"	1.318,791	-2,0000	-2,0000
9+820,000			8.273.860,6803	809.916,2966	1.318,143	351°54'25"	1.318,339	-2,0000	-2,0000
9+840,000			8.273.863,4960	809.936,0974	1.317,657	351°54'25"	1.317,887	-2,0000	-2,0000
9+860,000			8.273.866,3117	809.955,8982	1.317,198	351°54'25"	1.317,435	-2,0000	-2,0000
9+880,000			8.273.869,1273	809.975,6990	1.316,778	351°54'25"	1.316,983	-2,0000	-2,0000
9+900,000			8.273.871,9430	809.995,4998	1.316,340	351°54'25"	1.316,531	-2,0000	-2,0000
9+920,000			8.273.874,7587	810.015,3006	1.315,852	351°54'25"	1.316,079	-2,0000	-2,0000
9+940,000			8.273.877,5743	810.035,1014	1.315,382	351°54'25"	1.315,628	-2,0000	-2,0000
9+960,000			8.273.880,3900	810.054,9022	1.314,908	351°54'25"	1.315,176	-2,0000	-2,0000
9+980,000			8.273.883,2057	810.074,7030	1.314,504	351°54'25"	1.314,724	-2,0000	-2,0000
10			8.273.886,0213	810.094,5038	1.314,080	351°54'25"	1.314,272	-2,0000	-2,0000
10+20,000			8.273.888,8370	810.114,3046	1.313,649	351°54'25"	1.313,820	-2,0000	-2,0000
10+40,000			8.273.891,6527	810.134,1055	1.313,200	351°54'25"	1.313,368	-2,0000	-2,0000
10+60,000			8.273.894,4683	810.153,9063	1.312,740	351°54'25"	1.312,916	-2,0000	-2,0000
10+80,000			8.273.897,2840	810.173,7071	1.312,299	351°54'25"	1.312,464	-2,0000	-2,0000
10+100,000			8.273.900,0997	810.193,5079	1.311,859	351°54'25"	1.312,013	-2,0000	-2,0000
10+120,000			8.273.902,9153	810.213,3087	1.311,384	351°54'25"	1.311,561	-2,0000	-2,0000
10+140,000			8.273.905,7310	810.233,1095	1.311,034	351°54'25"	1.311,109	-2,0000	-2,0000
10+160,000			8.273.908,5467	810.252,9103	1.310,522	351°54'25"	1.310,657	-2,0000	-2,0000
10+180,000			8.273.911,3623	810.272,7111	1.310,073	351°54'25"	1.310,205	-2,0000	-2,0000
10+200,000			8.273.914,1780	810.292,5119	1.309,626	351°54'25"	1.309,753	-2,0000	-2,0000
10+220,000			8.273.916,9937	810.312,3127	1.309,169	351°54'25"	1.309,301	-2,0000	-2,0000
10+240,000			8.273.919,8093	810.332,1135	1.308,700	351°54'25"	1.308,849	-2,0000	-2,0000
10+260,000			8.273.922,6250	810.351,9144	1.308,286	351°54'25"	1.308,398	-2,0000	-2,0000
10+280,000			8.273.925,4407	810.371,7152	1.307,825	351°54'25"	1.307,946	-2,0000	-2,0000
10+300,000			8.273.928,2563	810.391,5160	1.307,369	351°54'25"	1.307,494	-2,0000	-2,0000
10+320,000			8.273.931,0720	810.411,3168	1.306,900	351°54'25"	1.307,042	-2,0000	-2,0000
10+340,000			8.273.933,8877	810.431,1176	1.306,498	351°54'25"	1.306,590	-2,0000	-2,0000
10+360,000			8.273.936,7033	810.450,9184	1.306,082	351°54'25"	1.306,138	-2,0000	-2,0000
10+380,000			8.273.939,5190	810.470,7192	1.305,658	351°54'25"	1.305,686	-2,0000	-2,0000
10+400,000			8.273.942,3347	810.490,5200	1.305,231	351°54'25"	1.305,234	-2,0000	-2,0000
10+420,000			8.273.945,1503	810.510,3208	1.304,795	351°54'25"	1.304,783	-2,0000	-2,0000
10+440,000			8.273.947,9660	810.530,1216	1.304,296	351°54'25"	1.304,331	-2,0000	-2,0000
10+460,000			8.273.950,7817	810.549,9224	1.303,803	351°54'25"	1.303,879	-2,0000	-2,0000
10+480,000			8.273.953,5973	810.569,7232	1.303,334	351°54'25"	1.303,427	-2,0000	-2,0000
10+500,000			8.273.956,4130	810.589,5241	1.302,874	351°54'25"	1.302,975	-2,0000	-2,0000
10+520,000			8.273.959,2287	810.609,3249	1.302,424	351°54'25"	1.302,523	-2,0000	-2,0000



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TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
10+540,000			8.273.962,0443	810.629,1257	1.301,945	351°54'25"	1.302,071	-2,0000	-2,0000
10+560,000			8.273.964,8600	810.648,9265	1.301,473	351°54'25"	1.301,619	-2,0000	-2,0000
10+580,000			8.273.967,6757	810.668,7273	1.301,031	351°54'25"	1.301,168	-2,0000	-2,0000
10+600,000			8.273.970,4913	810.688,5281	1.300,615	351°54'25"	1.300,716	-2,0000	-2,0000
10+620,000			8.273.973,3070	810.708,3289	1.300,154	351°54'25"	1.300,264	-2,0000	-2,0000
10+640,000			8.273.976,1227	810.728,1297	1.299,711	351°54'25"	1.299,812	-2,0000	-2,0000
10+660,000			8.273.978,9383	810.747,9305	1.299,301	351°54'25"	1.299,360	-2,0000	-2,0000
10+680,000			8.273.981,7540	810.767,7313	1.298,868	351°54'25"	1.298,908	-2,0000	-2,0000
10+700,000			8.273.984,5697	810.787,5321	1.298,384	351°54'25"	1.298,456	-2,0000	-2,0000
10+720,000			8.273.987,3853	810.807,3329	1.297,945	351°54'25"	1.298,004	-2,0000	-2,0000
10+740,000			8.273.990,2010	810.827,1338	1.297,460	351°54'25"	1.297,553	-2,0000	-2,0000
10+760,000			8.273.993,0167	810.846,9346	1.297,021	351°54'25"	1.297,101	-2,0000	-2,0000
10+780,000			8.273.995,8323	810.866,7354	1.296,579	351°54'25"	1.296,649	-2,0000	-2,0000
10+800,000			8.273.998,6480	810.886,5362	1.296,144	351°54'25"	1.296,197	-2,0000	-2,0000
10+820,000			8.274.001,4637	810.906,3370	1.295,697	351°54'25"	1.295,745	-2,0000	-2,0000
10+840,000			8.274.004,2793	810.926,1378	1.295,232	351°54'25"	1.295,293	-2,0000	-2,0000
10+860,000			8.274.007,0950	810.945,9386	1.294,804	351°54'25"	1.294,841	-2,0000	-2,0000
10+880,000			8.274.009,9107	810.965,7394	1.294,170	351°54'25"	1.294,390	-2,0000	-2,0000
10+900,000			8.274.012,7263	810.985,5402	1.293,737	351°54'25"	1.293,938	-2,0000	-2,0000
10+920,000			8.274.015,5420	811.005,3410	1.293,273	351°54'25"	1.293,486	-2,0000	-2,0000
10+940,000			8.274.018,3576	811.025,1418	1.292,933	351°54'25"	1.293,034	-2,0000	-2,0000
10+960,000			8.274.021,1733	811.044,9427	1.292,571	351°54'25"	1.292,582	-2,0000	-2,0000
10+980,000			8.274.023,9890	811.064,7435	1.292,119	351°54'25"	1.292,130	-2,0000	-2,0000
10+994,136			8.274.025,9791	811.078,7387	1.291,827	351°54'25"	1.291,811	-2,0000	-2,0000
11			8.274.026,8046	811.084,5443	1.291,690	351°54'25"	1.291,678	-2,0000	-2,0000
11+20,000			8.274.029,6203	811.104,3451	1.291,188	351°54'25"	1.291,226	-2,0000	-2,0000
11+31,636			8.274.031,2585	811.115,8652	1.290,924	351°54'25"	1.290,964	-2,0000	-2,0000
11+40,000			8.274.032,4360	811.124,1459	1.290,734	351°54'25"	1.290,775	-2,0000	-2,0000
11+49,482			8.274.033,7709	811.133,5335	1.290,518	351°54'25"	1.290,560	-2,0000	-2,0000
11+54,136			8.274.034,4261	811.138,1411	1.290,414	351°54'25"	1.290,455	-1,6626	-2,0000
11+60,000			8.274.035,2516	811.143,9467	1.290,284	351°54'25"	1.290,323	-1,2374	-2,0000
11+77,068			8.274.037,6545	811.160,8447	1.289,897	351°54'25"	1.289,937	0,0000	-2,0000
11+80,000			8.274.038,0673	811.163,7475	1.289,826	351°54'25"	1.289,871	0,2126	-2,0000
11+84,136			8.274.038,6496	811.167,8423	1.289,727	351°54'25"	1.289,777	0,5124	-2,0000
11+90,034	PC3		8.274.039,4799	811.173,6815	1.289,584	351°54'25"	1.289,644	0,9400	-2,0000
11+100,000			8.274.040,8394	811.183,5544	1.289,341	352°24'47"	1.289,419	1,6625	-2,0000
11+104,655			8.274.041,4444	811.188,1698	1.289,231	352°38'58"	1.289,314	2,0000	-2,0000
11+117,068			8.274.042,9648	811.200,4893	1.288,979	353°16'48"	1.289,033	2,9000	-2,9000
11+120,000			8.274.043,3041	811.203,4017	1.288,918	353°25'44"	1.288,967	2,9000	-2,9000
11+121,968			8.274.043,5276	811.205,3568	1.288,874	353°31'44"	1.288,923	2,9000	-2,9000
11+139,425			8.274.045,3607	811.222,7172	1.288,479	354°24'56"	1.288,528	2,9000	-2,9000
11+140,000			8.274.045,4166	811.223,2895	1.288,466	354°26'41"	1.288,515	2,9000	-2,9000
11+160,000			8.274.047,1761	811.243,2117	1.287,977	355°27'38"	1.288,063	2,9000	-2,9000
11+180,000			8.274.048,5821	811.263,1620	1.287,510	356°28'36"	1.287,611	2,9000	-2,9000



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Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
11+181,790			8.274.048,6907	811.264,9486	1.287,470	356°34'03"	1.287,571	2,9000	-2,9000
11+200,000			8.274.049,6342	811.283,1340	1.287,052	357°29'33"	1.287,160	2,9000	-2,9000
11+220,000			8.274.050,3321	811.303,1216	1.286,602	358°30'30"	1.286,708	2,9000	-2,9000
11+240,000			8.274.050,6754	811.323,1184	1.286,004	359°31'27"	1.286,256	2,9000	-2,9000
11+260,000			8.274.050,6642	811.343,1181	1.285,591	0°32'24"	1.285,804	2,9000	-2,9000
11+280,000			8.274.050,2984	811.363,1145	1.285,181	1°33'22"	1.285,352	2,9000	-2,9000
11+300,000			8.274.049,5781	811.383,1013	1.284,671	2°34'19"	1.284,900	2,9000	-2,9000
11+320,000			8.274.048,5036	811.403,0721	1.284,160	3°35'16"	1.284,448	2,9000	-2,9000
11+340,000			8.274.047,0751	811.423,0208	1.283,675	4°36'13"	1.283,996	2,9000	-2,9000
11+360,000			8.274.045,2933	811.442,9410	1.283,212	5°37'10"	1.283,545	2,9000	-2,9000
11+380,000			8.274.043,1585	811.462,8265	1.282,792	6°38'07"	1.283,093	2,9000	-2,9000
11+400,000			8.274.040,6715	811.482,6710	1.282,315	7°39'05"	1.282,641	2,9000	-2,9000
11+413,880			8.274.038,7389	811.496,4156	1.281,970	8°21'23"	1.282,327	2,9000	-2,9000
11+420,000			8.274.037,8330	811.502,4683	1.281,826	8°40'02"	1.282,189	2,9000	-2,9000
11+440,000			8.274.034,6440	811.522,2121	1.281,354	9°40'59"	1.281,737	2,9000	-2,9000
11+456,245			8.274.031,7964	811.538,2053	1.280,891	10°30'29"	1.281,370	2,9000	-2,9000
11+460,000			8.274.031,1055	811.541,8963	1.280,826	10°41'56"	1.281,285	2,9000	-2,9000
11+473,702			8.274.028,4800	811.555,3442	1.280,461	11°23'42"	1.280,976	2,9000	-2,9000
11+480,000			8.274.027,2185	811.561,5147	1.280,340	11°42'53"	1.280,833	2,9000	-2,9000
11+500,000			8.274.022,9843	811.581,0611	1.279,893	12°43'51"	1.280,381	2,9000	-2,9000
11+503,610			8.274.022,1831	811.584,5810	1.279,805	12°54'51"	1.280,300	2,9000	-2,9000
11+520,000		PCV20	8.274.018,4042	811.600,5293	1.279,411	13°44'48"	1.279,930	2,9000	-2,9000
11+540,000			8.274.013,4796	811.619,9133	1.278,894	14°45'45"	1.279,474	2,9000	-2,9000
11+540,040			8.274.013,4695	811.619,9519	1.278,892	14°45'52"	1.279,473	2,9000	-2,9000
11+557,497			8.274.008,8902	811.636,7974	1.278,403	15°39'04"	1.279,069	2,9000	-2,9000
11+560,000			8.274.008,2122	811.639,2069	1.278,344	15°46'42"	1.279,011	2,9000	-2,9000
11+580,000			8.274.002,6035	811.658,4041	1.277,878	16°47'39"	1.278,540	2,9000	-2,9000
11+599,862			8.273.996,6976	811.677,3674	1.277,415	17°48'11"	1.278,065	2,9000	-2,9000
11+600,000			8.273.996,6554	811.677,4989	1.277,412	17°48'36"	1.278,061	2,9000	-2,9000
11+620,000			8.273.990,3697	811.696,4851	1.276,960	18°49'34"	1.277,575	2,9000	-2,9000
11+640,000			8.273.983,7483	811.715,3570	1.276,509	19°50'31"	1.277,082	2,9000	-2,9000
11+660,000			8.273.976,7934	811.734,1085	1.276,024	20°51'28"	1.276,581	2,9000	-2,9000
11+680,000			8.273.969,5071	811.752,7337	1.275,547	21°52'25"	1.276,072	2,9000	-2,9000
11+700,000			8.273.961,8917	811.771,2268	1.275,072	22°53'22"	1.275,555	2,9000	-2,9000
11+720,000			8.273.953,9497	811.789,5821	1.274,589	23°54'19"	1.275,031	2,9000	-2,9000
11+740,000			8.273.945,6834	811.807,7936	1.274,146	24°55'17"	1.274,500	2,9000	-2,9000
11+760,000			8.273.937,0956	811.825,8557	1.273,611	25°56'14"	1.273,961	2,9000	-2,9000
11+780,000			8.273.928,1889	811.843,7626	1.273,093	26°57'11"	1.273,414	2,9000	-2,9000
11+800,000			8.273.918,9662	811.861,5089	1.272,526	27°58'08"	1.272,860	2,9000	-2,9000
11+820,000			8.273.909,4302	811.879,0889	1.271,918	28°59'05"	1.272,298	2,9000	-2,9000
11+840,000			8.273.899,5841	811.896,4970	1.271,454	30°00'03"	1.271,728	2,9000	-2,9000
11+860,000			8.273.889,4308	811.913,7278	1.270,841	31°01'00"	1.271,151	2,9000	-2,9000
11+880,000			8.273.878,9737	811.930,7759	1.270,255	32°01'57"	1.270,566	2,9000	-2,9000
11+900,000			8.273.868,2160	811.947,6360	1.269,679	33°02'54"	1.269,974	2,9000	-2,9000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
11+920,000		PTV20	8.273.857,1610	811.964,3026	1.269,097	34°03'51"	1.269,374	2,9000	-2,9000
11+940,000			8.273.845,8123	811.980,7706	1.268,438	35°04'48"	1.268,770	2,9000	-2,9000
11+960,000			8.273.834,1733	811.997,0349	1.267,786	36°05'46"	1.268,167	2,9000	-2,9000
11+980,000			8.273.822,2479	812.013,0902	1.267,201	37°06'43"	1.267,563	2,9000	-2,9000
12			8.273.810,0397	812.028,9315	1.266,679	38°07'40"	1.266,959	2,9000	-2,9000
12+20,000			8.273.797,5525	812.044,5540	1.266,035	39°08'37"	1.266,356	2,9000	-2,9000
12+40,000			8.273.784,7903	812.059,9525	1.265,420	40°09'34"	1.265,752	2,9000	-2,9000
12+60,000			8.273.771,7571	812.075,1224	1.264,787	41°10'31"	1.265,148	2,9000	-2,9000
12+80,000			8.273.758,4570	812.090,0589	1.264,158	42°11'29"	1.264,545	2,9000	-2,9000
12+100,000			8.273.744,8942	812.104,7572	1.263,569	43°12'26"	1.263,941	2,9000	-2,9000
12+120,000			8.273.731,0729	812.119,2127	1.262,994	44°13'23"	1.263,337	2,9000	-2,9000
12+140,000			8.273.716,9975	812.133,4209	1.262,363	45°14'20"	1.262,734	2,9000	-2,9000
12+160,000			8.273.702,6724	812.147,3773	1.261,729	46°15'17"	1.262,130	2,9000	-2,9000
12+180,000			8.273.688,1022	812.161,0775	1.261,074	47°16'15"	1.261,526	2,9000	-2,9000
12+200,000			8.273.673,2913	812.174,5172	1.260,489	48°17'12"	1.260,923	2,9000	-2,9000
12+219,011			8.273.658,9940	812.187,0470	1.259,936	49°15'08"	1.260,349	2,0000	-2,0000
12+220,000			8.273.658,2444	812.187,6923	1.259,906	49°18'09"	1.260,319	1,9283	-2,0000
12+233,632	PT3		8.273.647,8560	812.196,5183	1.259,478	49°59'42"	1.259,908	0,9400	-2,0000
12+240,000			8.273.642,9779	812.200,6123	1.259,262	49°59'42"	1.259,715	0,4783	-2,0000
12+246,597			8.273.637,9250	812.204,8530	1.259,048	49°59'42"	1.259,516	0,0000	-2,0000
12+260,000			8.273.627,6582	812.213,4694	1.258,643	49°59'42"	1.259,112	-0,9717	-2,0000
12+274,183			8.273.616,7945	812.222,5868	1.258,266	49°59'42"	1.258,684	-2,0000	-2,0000
12+280,000			8.273.612,3384	812.226,3266	1.258,130	49°59'42"	1.258,508	-2,0000	-2,0000
12+300,000			8.273.597,0187	812.239,1837	1.257,526	49°59'42"	1.257,904	-2,0000	-2,0000
12+320,000			8.273.581,6989	812.252,0408	1.256,871	49°59'42"	1.257,301	-2,0000	-2,0000
12+340,000			8.273.566,3792	812.264,8979	1.256,279	49°59'42"	1.256,697	-2,0000	-2,0000
12+360,000			8.273.551,0595	812.277,7550	1.255,646	49°59'42"	1.256,093	-2,0000	-2,0000
12+380,000			8.273.535,7397	812.290,6122	1.254,972	49°59'42"	1.255,490	-2,0000	-2,0000
12+400,000			8.273.520,4200	812.303,4693	1.254,423	49°59'42"	1.254,886	-2,0000	-2,0000
12+420,000			8.273.505,1002	812.316,3264	1.253,760	49°59'42"	1.254,282	-2,0000	-2,0000
12+440,000		PCV21	8.273.489,7805	812.329,1835	1.253,233	49°59'42"	1.253,679	-2,0000	-2,0000
12+460,000			8.273.474,4608	812.342,0407	1.252,716	49°59'42"	1.253,129	-2,0000	-2,0000
12+480,000			8.273.459,1410	812.354,8978	1.252,228	49°59'42"	1.252,686	-2,0000	-2,0000
12+500,000			8.273.443,8213	812.367,7549	1.251,955	49°59'42"	1.252,350	-2,0000	-2,0000
12+520,000			8.273.428,5015	812.380,6120	1.251,862	49°59'42"	1.252,122	-2,0000	-2,0000
12+540,000			8.273.413,1818	812.393,4691	1.251,716	49°59'42"	1.252,001	-2,0000	-2,0000
12+560,000			8.273.397,8621	812.406,3263	1.251,720	49°59'42"	1.251,987	-2,0000	-2,0000
12+580,000			8.273.382,5423	812.419,1834	1.251,779	49°59'42"	1.252,080	-2,0000	-2,0000
12+600,000			8.273.367,2226	812.432,0405	1.251,944	49°59'42"	1.252,281	-2,0000	-2,0000
12+620,000			8.273.351,9028	812.444,8976	1.252,234	49°59'42"	1.252,589	-2,0000	-2,0000
12+640,000		PTV21	8.273.336,5831	812.457,7548	1.252,715	49°59'42"	1.253,004	-2,0000	-2,0000
12+660,000			8.273.321,2634	812.470,6119	1.253,141	49°59'42"	1.253,472	-2,0000	-2,0000
12+680,000			8.273.305,9436	812.483,4690	1.253,632	49°59'42"	1.253,941	-2,0000	-2,0000
12+700,000			8.273.290,6239	812.496,3261	1.254,124	49°59'42"	1.254,410	-2,0000	-2,0000





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GREIDE + SUPERELEVAÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
12+720,000			8.273.275,3042	812.509,1832	1.254,590	49°59'42"	1.254,879	-2,0000	-2,0000
12+740,000			8.273.259,9844	812.522,0404	1.255,057	49°59'42"	1.255,347	-2,0000	-2,0000
12+760,000			8.273.244,6647	812.534,8975	1.255,840	49°59'42"	1.255,816	-2,0000	-2,0000
12+780,000			8.273.229,3449	812.547,7546	1.256,126	49°59'42"	1.256,285	-2,0000	-2,0000
12+800,000			8.273.214,0252	812.560,6117	1.256,610	49°59'42"	1.256,753	-2,0000	-2,0000
12+820,000			8.273.198,7055	812.573,4689	1.257,053	49°59'42"	1.257,222	-2,0000	-2,0000
12+840,000			8.273.183,3857	812.586,3260	1.257,511	49°59'42"	1.257,691	-2,0000	-2,0000
12+860,000			8.273.168,0660	812.599,1831	1.257,983	49°59'42"	1.258,160	-2,0000	-2,0000
12+880,000			8.273.152,7462	812.612,0402	1.258,438	49°59'42"	1.258,628	-2,0000	-2,0000
12+900,000			8.273.137,4265	812.624,8973	1.258,921	49°59'42"	1.259,097	-2,0000	-2,0000
12+920,000			8.273.122,1068	812.637,7545	1.259,378	49°59'42"	1.259,566	-2,0000	-2,0000
12+940,000			8.273.106,7870	812.650,6116	1.259,780	49°59'42"	1.260,034	-2,0000	-2,0000
12+960,000			8.273.091,4673	812.663,4687	1.260,263	49°59'42"	1.260,503	-2,0000	-2,0000
12+980,000			8.273.076,1475	812.676,3258	1.260,724	49°59'42"	1.260,972	-2,0000	-2,0000
13			8.273.060,8278	812.689,1830	1.261,178	49°59'42"	1.261,441	-2,0000	-2,0000
13+20,000			8.273.045,5081	812.702,0401	1.261,641	49°59'42"	1.261,909	-2,0000	-2,0000
13+40,000			8.273.030,1883	812.714,8972	1.262,181	49°59'42"	1.262,378	-2,0000	-2,0000
13+60,000			8.273.014,8686	812.727,7543	1.262,644	49°59'42"	1.262,847	-2,0000	-2,0000
13+80,000			8.272.999,5488	812.740,6114	1.263,099	49°59'42"	1.263,315	-2,0000	-2,0000
13+100,000			8.272.984,2291	812.753,4686	1.263,567	49°59'42"	1.263,784	-2,0000	-2,0000
13+120,000			8.272.968,9094	812.766,3257	1.264,054	49°59'42"	1.264,253	-2,0000	-2,0000
13+140,000			8.272.953,5896	812.779,1828	1.264,549	49°59'42"	1.264,721	-2,0000	-2,0000
13+160,000			8.272.938,2699	812.792,0399	1.265,030	49°59'42"	1.265,190	-2,0000	-2,0000
13+180,000			8.272.922,9502	812.804,8971	1.265,475	49°59'42"	1.265,659	-2,0000	-2,0000
13+200,000			8.272.907,6304	812.817,7542	1.265,887	49°59'42"	1.266,128	-2,0000	-2,0000
13+220,000			8.272.892,3107	812.830,6113	1.266,346	49°59'42"	1.266,596	-2,0000	-2,0000
13+240,000			8.272.876,9909	812.843,4684	1.266,842	49°59'42"	1.267,065	-2,0000	-2,0000
13+260,000			8.272.861,6712	812.856,3255	1.267,314	49°59'42"	1.267,534	-2,0000	-2,0000
13+280,000			8.272.846,3515	812.869,1827	1.267,923	49°59'42"	1.268,002	-2,0000	-2,0000
13+300,000			8.272.831,0317	812.882,0398	1.268,400	49°59'42"	1.268,471	-2,0000	-2,0000
13+320,000			8.272.815,7120	812.894,8969	1.268,812	49°59'42"	1.268,940	-2,0000	-2,0000
13+340,000			8.272.800,3922	812.907,7540	1.269,296	49°59'42"	1.269,409	-2,0000	-2,0000
13+360,000			8.272.785,0725	812.920,6112	1.269,830	49°59'42"	1.269,877	-2,0000	-2,0000
13+380,000			8.272.769,7528	812.933,4683	1.270,207	49°59'42"	1.270,346	-2,0000	-2,0000
13+400,000			8.272.754,4330	812.946,3254	1.270,639	49°59'42"	1.270,815	-2,0000	-2,0000
13+420,000		PCV22	8.272.739,1133	812.959,1825	1.271,139	49°59'42"	1.271,283	-2,0000	-2,0000
13+440,000			8.272.723,7935	812.972,0396	1.271,579	49°59'42"	1.271,743	-2,0000	-2,0000
13+460,000			8.272.708,4738	812.984,8968	1.272,031	49°59'42"	1.272,185	-2,0000	-2,0000
13+480,000			8.272.693,1541	812.997,7539	1.272,504	49°59'42"	1.272,608	-2,0000	-2,0000
13+500,000			8.272.677,8343	813.010,6110	1.272,882	49°59'42"	1.273,014	-2,0000	-2,0000
13+520,000			8.272.662,5146	813.023,4681	1.273,232	49°59'42"	1.273,401	-2,0000	-2,0000
13+540,000			8.272.647,1948	813.036,3253	1.273,739	49°59'42"	1.273,770	-2,0000	-2,0000
13+560,000			8.272.631,8751	813.049,1824	1.274,100	49°59'42"	1.274,121	-2,0000	-2,0000
13+580,000			8.272.616,5554	813.062,0395	1.274,368	49°59'42"	1.274,454	-2,0000	-2,0000



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GREIDE + SUPERELEVÇÃO

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Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
13+600,000			8.272.601,2356	813.074,8966	1.274,660	49°59'42"	1.274,769	-2,0000	-2,0000
13+620,000			8.272.585,9159	813.087,7537	1.275,000	49°59'42"	1.275,066	-2,0000	-2,0000
13+640,000			8.272.570,5961	813.100,6109	1.275,203	49°59'42"	1.275,345	-2,0000	-2,0000
13+660,000			8.272.555,2764	813.113,4680	1.275,403	49°59'42"	1.275,606	-2,0000	-2,0000
13+680,000			8.272.539,9567	813.126,3251	1.275,637	49°59'42"	1.275,848	-2,0000	-2,0000
13+700,000			8.272.524,6369	813.139,1822	1.275,808	49°59'42"	1.276,073	-2,0000	-2,0000
13+720,000			8.272.509,3172	813.152,0394	1.275,957	49°59'42"	1.276,280	-2,0000	-2,0000
13+740,000			8.272.493,9975	813.164,8965	1.276,114	49°59'42"	1.276,468	-2,0000	-2,0000
13+760,000			8.272.478,6777	813.177,7536	1.276,261	49°59'42"	1.276,638	-2,0000	-2,0000
13+780,000			8.272.463,3580	813.190,6107	1.276,376	49°59'42"	1.276,790	-2,0000	-2,0000
13+800,000			8.272.448,0382	813.203,4678	1.276,492	49°59'42"	1.276,925	-2,0000	-2,0000
13+820,000			8.272.432,7185	813.216,3250	1.276,564	49°59'42"	1.277,041	-2,0000	-2,0000
13+840,000			8.272.417,3988	813.229,1821	1.276,685	49°59'42"	1.277,139	-2,0000	-2,0000
13+860,000			8.272.402,0790	813.242,0392	1.276,802	49°59'42"	1.277,219	-2,0000	-2,0000
13+880,000			8.272.386,7593	813.254,8963	1.276,881	49°59'42"	1.277,280	-2,0000	-2,0000
13+900,000			8.272.371,4395	813.267,7535	1.276,964	49°59'42"	1.277,324	-2,0000	-2,0000
13+920,000			8.272.356,1198	813.280,6106	1.277,032	49°59'42"	1.277,350	-2,0000	-2,0000
13+940,000			8.272.340,8001	813.293,4677	1.277,105	49°59'42"	1.277,357	-2,0000	-2,0000
13+960,000			8.272.325,4803	813.306,3248	1.277,141	49°59'42"	1.277,347	-2,0000	-2,0000
13+980,000			8.272.310,1606	813.319,1819	1.277,183	49°59'42"	1.277,318	-2,0000	-2,0000
14			8.272.294,8408	813.332,0391	1.277,117	49°59'42"	1.277,271	-2,0000	-2,0000
14+20,000			8.272.279,5211	813.344,8962	1.277,213	49°59'42"	1.277,207	-2,0000	-2,0000
14+40,000			8.272.264,2014	813.357,7533	1.277,219	49°59'42"	1.277,124	-2,0000	-2,0000
14+60,000			8.272.248,8816	813.370,6104	1.277,076	49°59'42"	1.277,023	-2,0000	-2,0000
14+80,000			8.272.233,5619	813.383,4676	1.276,869	49°59'42"	1.276,904	-2,0000	-2,0000
14+100,000			8.272.218,2421	813.396,3247	1.276,717	49°59'42"	1.276,767	-2,0000	-2,0000
14+120,000			8.272.202,9224	813.409,1818	1.276,671	49°59'42"	1.276,611	-2,0000	-2,0000
14+140,000			8.272.187,6027	813.422,0389	1.276,398	49°59'42"	1.276,438	-2,0000	-2,0000
14+160,000			8.272.172,2829	813.434,8960	1.276,233	49°59'42"	1.276,247	-2,0000	-2,0000
14+180,000			8.272.156,9632	813.447,7532	1.275,999	49°59'42"	1.276,037	-2,0000	-2,0000
14+181,771			8.272.155,6069	813.448,8914	1.275,975	49°59'42"	1.276,018	-2,0000	-2,0000
14+200,000			8.272.141,6435	813.460,6103	1.275,777	49°59'42"	1.275,810	-2,0000	-2,0000
14+219,271			8.272.126,8824	813.472,9985	1.275,549	49°59'42"	1.275,573	-2,0000	-2,0000
14+220,000			8.272.126,3237	813.473,4674	1.275,539	49°59'42"	1.275,564	-2,0000	-2,0000
14+240,000			8.272.111,0040	813.486,3245	1.275,238	49°59'42"	1.275,300	-2,0000	-2,0000
14+241,771			8.272.109,6477	813.487,4628	1.275,203	49°59'42"	1.275,276	-2,0000	-2,0000
14+260,000			8.272.095,6842	813.499,1817	1.274,884	49°59'42"	1.275,019	-2,0000	-2,0000
14+271,771			8.272.086,6681	813.506,7485	1.274,704	49°59'42"	1.274,844	-2,0000	-2,0000
14+280,000			8.272.080,3645	813.512,0388	1.274,551	49°59'42"	1.274,719	-2,0000	-2,0000
14+294,271			8.272.069,4334	813.521,2127	1.274,289	49°59'42"	1.274,494	-2,0000	-2,0000
14+300,000			8.272.065,0448	813.524,8959	1.274,202	49°59'42"	1.274,401	-2,0000	-2,0000
14+320,000			8.272.049,7250	813.537,7530	1.273,846	49°59'42"	1.274,065	-2,0000	-2,0000
14+331,771			8.272.040,7089	813.545,3198	1.273,599	49°59'42"	1.273,858	-2,0000	-2,0000
14+340,000			8.272.034,4053	813.550,6101	1.273,401	49°59'42"	1.273,711	-2,0000	-2,0000



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GREIDE + SUPERELEVAÇÃO

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Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
14+360,000			8.272.019,0855	813.563,4673	1.272,923	49°59'42"	1.273,338	-2,0000	-2,0000
14+380,000		PTV22	8.272.003,7658	813.576,3244	1.272,655	49°59'42"	1.272,948	-2,0000	-2,0000
14+400,000			8.271.988,4461	813.589,1815	1.272,303	49°59'42"	1.272,549	-2,0000	-2,0000
14+420,000			8.271.973,1263	813.602,0386	1.271,939	49°59'42"	1.272,149	-2,0000	-2,0000
14+440,000			8.271.957,8066	813.614,8958	1.271,564	49°59'42"	1.271,750	-2,0000	-2,0000
14+460,000			8.271.942,4868	813.627,7529	1.271,159	49°59'42"	1.271,351	-2,0000	-2,0000
14+480,000			8.271.927,1671	813.640,6100	1.270,728	49°59'42"	1.270,951	-2,0000	-2,0000
14+500,000			8.271.911,8474	813.653,4671	1.270,357	49°59'42"	1.270,552	-2,0000	-2,0000
14+520,000			8.271.896,5276	813.666,3242	1.270,050	49°59'42"	1.270,153	-2,0000	-2,0000
14+540,000			8.271.881,2079	813.679,1814	1.269,587	49°59'42"	1.269,753	-2,0000	-2,0000
14+560,000			8.271.865,8881	813.692,0385	1.269,125	49°59'42"	1.269,354	-2,0000	-2,0000
14+580,000			8.271.850,5684	813.704,8956	1.268,831	49°59'42"	1.268,955	-2,0000	-2,0000
14+600,000			8.271.835,2487	813.717,7527	1.268,386	49°59'42"	1.268,555	-2,0000	-2,0000
14+620,000			8.271.819,9289	813.730,6099	1.267,850	49°59'42"	1.268,156	-2,0000	-2,0000
14+640,000			8.271.804,6092	813.743,4670	1.267,443	49°59'42"	1.267,756	-2,0000	-2,0000
14+660,000			8.271.789,2895	813.756,3241	1.267,037	49°59'42"	1.267,357	-2,0000	-2,0000
14+680,000			8.271.773,9697	813.769,1812	1.266,611	49°59'42"	1.266,958	-2,0000	-2,0000
14+700,000			8.271.758,6500	813.782,0383	1.266,196	49°59'42"	1.266,558	-2,0000	-2,0000
14+720,000			8.271.743,3302	813.794,8955	1.265,793	49°59'42"	1.266,159	-2,0000	-2,0000
14+740,000			8.271.728,0105	813.807,7526	1.265,394	49°59'42"	1.265,760	-2,0000	-2,0000
14+760,000			8.271.712,6908	813.820,6097	1.265,016	49°59'42"	1.265,360	-2,0000	-2,0000
14+780,000			8.271.697,3710	813.833,4668	1.264,650	49°59'42"	1.264,961	-2,0000	-2,0000
14+800,000			8.271.682,0513	813.846,3240	1.264,259	49°59'42"	1.264,562	-2,0000	-2,0000
14+820,000			8.271.666,7315	813.859,1811	1.263,783	49°59'42"	1.264,162	-2,0000	-2,0000
14+840,000			8.271.651,4118	813.872,0382	1.263,269	49°59'42"	1.263,763	-2,0000	-2,0000
14+860,000			8.271.636,0921	813.884,8953	1.262,956	49°59'42"	1.263,364	-2,0000	-2,0000
14+880,000			8.271.620,7723	813.897,7524	1.262,625	49°59'42"	1.262,964	-2,0000	-2,0000
14+900,000			8.271.605,4526	813.910,6096	1.262,265	49°59'42"	1.262,565	-2,0000	-2,0000
14+920,000			8.271.590,1328	813.923,4667	1.261,886	49°59'42"	1.262,166	-2,0000	-2,0000
14+940,000		PCV23	8.271.574,8131	813.936,3238	1.261,431	49°59'42"	1.261,766	-2,0000	-2,0000
14+960,000			8.271.559,4934	813.949,1809	1.261,084	49°59'42"	1.261,405	-2,0000	-2,0000
14+980,000			8.271.544,1736	813.962,0381	1.260,831	49°59'42"	1.261,121	-2,0000	-2,0000
15			8.271.528,8539	813.974,8952	1.260,679	49°59'42"	1.260,913	-2,0000	-2,0000
15+20,000			8.271.513,5341	813.987,7523	1.260,506	49°59'42"	1.260,782	-2,0000	-2,0000
15+40,000			8.271.498,2144	814.000,6094	1.260,466	49°59'42"	1.260,727	-2,0000	-2,0000
15+60,000			8.271.482,8947	814.013,4665	1.260,495	49°59'42"	1.260,749	-2,0000	-2,0000
15+80,000			8.271.467,5749	814.026,3237	1.260,651	49°59'42"	1.260,848	-2,0000	-2,0000
15+100,000			8.271.452,2552	814.039,1808	1.260,885	49°59'42"	1.261,023	-2,0000	-2,0000
15+120,000			8.271.436,9354	814.052,0379	1.261,191	49°59'42"	1.261,275	-2,0000	-2,0000
15+140,000			8.271.421,6157	814.064,8950	1.261,467	49°59'42"	1.261,604	-2,0000	-2,0000
15+160,000			8.271.406,2960	814.077,7522	1.261,939	49°59'42"	1.262,009	-2,0000	-2,0000
15+180,000		PTV23	8.271.390,9762	814.090,6093	1.262,436	49°59'42"	1.262,491	-2,0000	-2,0000
15+200,000			8.271.375,6565	814.103,4664	1.262,952	49°59'42"	1.263,011	-2,0000	-2,0000
15+220,000			8.271.360,3368	814.116,3235	1.263,508	49°59'42"	1.263,531	-2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVÇÃO

DF-220-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
15+240,000			8.271.345,0170	814.129,1806	1.264,049	49°59'42"	1.264,051	-2,0000	-2,0000
15+260,000			8.271.329,6973	814.142,0378	1.264,620	49°59'42"	1.264,571	-2,0000	-2,0000
15+280,000			8.271.314,3775	814.154,8949	1.265,141	49°59'42"	1.265,092	-2,0000	-2,0000
15+300,000			8.271.299,0578	814.167,7520	1.265,594	49°59'42"	1.265,612	-2,0000	-2,0000
15+320,000			8.271.283,7381	814.180,6091	1.266,037	49°59'42"	1.266,132	-2,0000	-2,0000
15+340,000			8.271.268,4183	814.193,4663	1.266,525	49°59'42"	1.266,652	-2,0000	-2,0000
15+360,000			8.271.253,0986	814.206,3234	1.267,079	49°59'42"	1.267,172	-2,0000	-2,0000
15+380,000			8.271.237,7788	814.219,1805	1.267,594	49°59'42"	1.267,692	-2,0000	-2,0000
15+400,000			8.271.222,4591	814.232,0376	1.268,119	49°59'42"	1.268,212	-2,0000	-2,0000
15+420,000			8.271.207,1394	814.244,8947	1.268,618	49°59'42"	1.268,733	-2,0000	-2,0000
15+440,000			8.271.191,8196	814.257,7519	1.269,113	49°59'42"	1.269,253	-2,0000	-2,0000
15+460,000			8.271.176,4999	814.270,6090	1.269,683	49°59'42"	1.269,773	-2,0000	-2,0000
15+480,000			8.271.161,1801	814.283,4661	1.270,214	49°59'42"	1.270,293	-2,0000	-2,0000
15+500,000			8.271.145,8604	814.296,3232	1.270,731	49°59'42"	1.270,813	-2,0000	-2,0000
15+520,000			8.271.130,5407	814.309,1804	1.271,295	49°59'42"	1.271,333	-2,0000	-2,0000
15+540,000			8.271.115,2209	814.322,0375	1.271,798	49°59'42"	1.271,853	-2,0000	-2,0000
15+560,000		PCV24	8.271.099,9012	814.334,8946	1.272,326	49°59'42"	1.272,373	-2,0000	-2,0000
15+580,000			8.271.084,5814	814.347,7517	1.272,767	49°59'42"	1.272,881	-2,0000	-2,0000
15+600,000			8.271.069,2617	814.360,6088	1.273,204	49°59'42"	1.273,362	-2,0000	-2,0000
15+620,000			8.271.053,9420	814.373,4660	1.273,627	49°59'42"	1.273,818	-2,0000	-2,0000
15+640,000			8.271.038,6222	814.386,3231	1.274,018	49°59'42"	1.274,248	-2,0000	-2,0000
15+660,000			8.271.023,3025	814.399,1802	1.274,383	49°59'42"	1.274,652	-2,0000	-2,0000
15+680,000			8.271.007,9828	814.412,0373	1.274,730	49°59'42"	1.275,031	-2,0000	-2,0000
15+700,000			8.270.992,6630	814.424,8944	1.275,112	49°59'42"	1.275,384	-2,0000	-2,0000
15+720,000			8.270.977,3433	814.437,7516	1.275,303	49°59'42"	1.275,711	-2,0000	-2,0000
15+740,000			8.270.962,0235	814.450,6087	1.275,766	49°59'42"	1.276,013	-2,0000	-2,0000
15+760,000		PTV24	8.270.946,7038	814.463,4658	1.276,004	49°59'42"	1.276,288	-2,0000	-2,0000
15+775,199		V25	8.270.935,0619	814.473,2363	1.276,157	49°59'42"	1.276,488	-2,0000	-2,0000
15+780,000			8.270.931,3841	814.476,3229	1.276,227	49°59'42"			
15+800,000			8.270.916,0643	814.489,1801	1.276,501	49°59'42"			
15+820,000			8.270.900,7446	814.502,0372	1.276,742	49°59'42"			
15+840,000			8.270.885,4248	814.514,8943	1.277,039	49°59'42"			
15+860,000			8.270.870,1051	814.527,7514	1.276,896	49°59'42"			
15+880,000			8.270.854,7854	814.540,6085	1.277,054	49°59'42"			
15+900,000			8.270.839,4656	814.553,4657	1.277,701	49°59'42"			
15+920,000			8.270.824,1459	814.566,3228	1.277,622	49°59'42"			
15+940,000			8.270.808,8261	814.579,1799	1.277,613	49°59'42"			
15+947,025	PI-4		8.270.803,4453	814.583,6958	1.277,571	49°59'42"			

#### **4.1.6.2 – Relatórios Dispositivo Km 0 (Entronc. DF-180/DF-220)**

#### 4.1.6.2.1 – Locação



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DISP KM 0-RAMO 1



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
0	PC1	0,000	8.271.571,4680	800.505,3915	1.125,756	225°59'23"
0+20,000		20,000	8.271.582,3025	800.488,7805	1.125,499	200°14'20"
0+24,870	NF	24,870	8.271.583,7341	800.484,1282	1.125,394	193°58'07"
0+27,280		27,280	8.271.584,2522	800.481,7749	1.125,365	190°51'56"
0+40,000		40,000	8.271.584,8443	800.469,1120	1.125,516	174°29'17"
0+47,120		47,120	8.271.583,5975	800.462,1097	1.125,664	165°19'14"
0+52,648		52,648	8.271.581,8685	800.456,8628	1.125,397	158°12'11"
0+57,358	NF	57,358	8.271.579,8917	800.452,5901	1.124,359	152°08'20"
0+60,000		60,000	8.271.578,5884	800.450,2924	1.124,226	148°44'14"
0+80,000		80,000	8.271.564,7775	800.436,0597	1.122,791	122°59'10"
0+80,108	PC2	80,108	8.271.564,6865	800.436,0008	1.122,784	122°50'48"
0+80,109		80,109	8.271.564,6857	800.436,0003	1.122,784	122°50'44"
0+100,000		100,000	8.271.546,1544	800.429,2407	1.120,575	97°14'07"
0+100,450		100,450	8.271.545,7075	800.429,1862	1.120,564	96°39'20"
0+120,000		120,000	8.271.526,4183	800.431,1898	1.121,376	71°29'03"
0+120,791		120,791	8.271.525,6704	800.431,4478	1.121,515	70°27'56"
0+120,792	PC3	120,792	8.271.525,6695	800.431,4481	1.121,515	70°27'52"
0+140,000		140,000	8.271.509,4891	800.441,5199	1.121,541	45°44'00"
0+147,806	NF	147,806	8.271.504,4044	800.447,4298	1.122,057	35°40'57"
0+150,450		150,450	8.271.502,9268	800.449,6219	1.122,432	32°16'42"
0+160,000		160,000	8.271.498,7290	800.458,1792	1.122,372	19°58'57"
0+170,056		170,056	8.271.496,3849	800.467,9364	1.122,071	7°02'05"
0+178,395		178,395	8.271.496,1428	800.476,2597	1.122,256	356°17'52"
0+180,000		180,000	8.271.496,2753	800.477,8589	1.122,256	354°13'54"
0+182,846	NF	182,846	8.271.496,6517	800.480,6797	1.122,332	350°34'01"
0+200,000		200,000	8.271.502,6153	800.496,6503	1.123,251	328°28'51"
0+204,455	PC4	204,455	8.271.505,1304	800.500,3253	1.123,442	322°44'41"
0+220,000		220,000	8.271.516,4899	800.510,8212	1.124,143	302°43'47"
0+229,815	NF	229,815	8.271.525,2625	800.515,1781	1.124,572	290°05'33"
0+232,278		232,278	8.271.527,5979	800.515,9598	1.124,661	286°55'17"
0+240,000		240,000	8.271.535,1431	800.517,5567	1.124,974	276°58'44"
0+252,065		252,065	8.271.547,1700	800.517,3912	1.125,081	261°26'41"
0+254,053		254,053	8.271.549,1286	800.517,0517	1.125,202	258°53'06"
0+258,411	NF	258,411	8.271.553,3569	800.516,0037	1.125,163	253°16'26"
0+260,000		260,000	8.271.554,8703	800.515,5193	1.125,084	251°13'40"
0+279,602	PI-5	279,602	8.271.571,4680	800.505,3915	1.125,756	225°59'23"



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO  
DISP KM 0-RAMO 2

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
0		0,000	8.271.538,1674	800.601,8309	1.127,744	176°42'18"
0+20,000		20,000	8.271.538,6832	800.581,8607	1.127,128	186°15'16"
0+35,882	PCV1	35,882	8.271.541,4516	800.566,2336	1.126,654	193°50'15"
0+40,000		40,000	8.271.542,5049	800.562,2528	1.126,418	195°48'13"
0+41,384		41,384	8.271.542,8895	800.560,9233	1.126,327	196°27'52"
0+44,606		44,606	8.271.543,8441	800.557,8461	1.126,278	198°00'10"
0+60,000		60,000	8.271.549,5265	800.543,5506	1.126,022	205°21'11"
0+64,913		64,913	8.271.551,7205	800.539,1551	1.125,843	207°41'55"
0+77,026		77,026	8.271.557,8822	800.528,7323	1.125,855	213°28'56"
0+80,000		80,000	8.271.559,5535	800.526,2724	1.125,604	214°54'08"
0+81,658		81,658	8.271.560,5115	800.524,9192	1.125,599	215°41'38"
0+100,000		100,000	8.271.572,3078	800.510,8971	1.126,084	224°27'06"
0+103,222		103,222	8.271.574,5948	800.508,6276	1.126,100	225°59'24"
0+120,000		120,000	8.271.587,4362	800.497,8507	1.125,931	234°00'03"
0+128,689		128,689	8.271.594,6445	800.493,0024	1.125,986	238°08'58"
0+131,288		131,288	8.271.596,8668	800.491,6549	1.126,008	239°23'26"
0+140,000		140,000	8.271.604,5192	800.487,4948	1.126,104	243°33'00"
0+152,218		152,218	8.271.615,7162	800.482,6186	1.126,310	249°23'02"
0+155,882	PTV1	155,882	8.271.619,1647	800.481,3810		251°08'00"
0+160,000		160,000	8.271.623,0836	800.480,1165	1.126,581	253°05'58"
0+165,989		165,989	8.271.628,8550	800.478,5191	1.126,805	255°57'32"
0+170,669		170,669	8.271.633,4161	800.477,4725	1.126,974	258°11'37"
0+180,000		180,000	8.271.642,6147	800.475,9201	1.127,677	262°38'55"
0+200,000		200,000	8.271.662,5714	800.475,0221	1.128,630	272°11'53"
0+207,557	V2	207,557	8.271.670,1083	800.475,5494	1.128,941	275°48'22"





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO  
DISP KM 0-RAMO 3

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
0		0,000	8.271.670,8164	800.468,5853	1.128,955	95°48'22"
0+20,000		20,000	8.271.651,0291	800.465,7183	1.128,139	100°40'56"
0+37,395	PCV1	37,395	8.271.634,0704	800.461,8645	1.127,400	104°55'24"
0+40,000		40,000	8.271.631,5570	800.461,1797	1.127,285	105°33'31"
0+42,221		42,221	8.271.629,4203	800.460,5739	1.127,031	106°06'00"
0+60,000		60,000	8.271.612,5413	800.455,0023	1.125,382	110°26'05"
0+61,622		61,622	8.271.611,0233	800.454,4308	1.125,308	110°49'49"
0+80,000		80,000	8.271.594,1195	800.447,2309	1.124,566	115°18'40"
0+82,178		82,178	8.271.592,1549	800.446,2906	1.124,434	115°50'31"
0+87,341	PTV1	87,341	8.271.587,5333	800.443,9893	1.124,118	117°06'03"
0+100,000		100,000	8.271.576,4249	800.437,9217	1.123,321	120°11'14"
0+110,908	V2	110,908	8.271.567,1273	800.432,2203	1.122,684	122°50'48"

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO  
DISP KM 0-RAMO 4

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
0		0,000	8.271.524,1646	800.427,2071	1.120,290	70°27'51"
0+20,000		20,000	8.271.505,0884	800.433,2005	1.120,927	74°39'08"
0+28,296	PCV1	28,296	8.271.497,0562	800.435,2747	1.120,853	76°23'22"
0+31,267		31,267	8.271.494,1649	800.435,9581	1.120,824	77°00'41"
0+40,000		40,000	8.271.485,6255	800.437,7848	1.120,723	78°50'25"
0+52,629		52,629	8.271.473,1833	800.439,9423	1.120,454	81°29'05"
0+60,000		60,000	8.271.465,8797	800.440,9355	1.120,287	83°01'41"
0+75,134		75,134	8.271.450,8145	800.442,3562	1.120,348	86°11'50"
0+80,000		80,000	8.271.445,9566	800.442,6358	1.120,075	87°12'58"
0+80,370	PTV1	80,370	8.271.445,5870	800.442,6535	1.120,074	87°17'37"
0+100,000		100,000	8.271.425,9625	800.442,8766	1.119,337	91°24'14"
0+120,000		120,000	8.271.406,0042	800.441,6566	1.118,449	95°35'31"
0+121,023	V2	121,023	8.271.404,9869	800.441,5550	1.118,400	95°48'22"

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RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DISP KM 0-RAMO 5



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
0		0,000	8.271.404,2788	800.448,5191	1.118,391	275°48'22"
0+20,000		20,000	8.271.423,9643	800.451,9543	1.119,298	283°59'28"
0+39,761		39,761	8.271.442,7388	800.458,0671	1.120,310	292°04'42"
0+40,000	PCV1	40,000	8.271.442,9602	800.458,1571	1.120,321	292°10'34"
0+44,839		44,839	8.271.447,4088	800.460,0607	1.120,505	294°09'24"
0+60,000		60,000	8.271.460,8795	800.467,0013	1.121,003	300°21'41"
0+63,489		63,489	8.271.463,8677	800.468,8021	1.121,115	301°47'21"
0+80,000	PTV1	80,000	8.271.477,3571	800.478,3065	1.121,823	308°32'47"
0+87,817		87,817	8.271.483,3317	800.483,3458	1.122,300	311°44'44"
0+92,590		92,590	8.271.486,8380	800.486,5838	1.122,595	313°41'56"
0+100,000		100,000	8.271.492,0574	800.491,8425	1.122,984	316°43'54"
0+114,693		114,693	8.271.501,5488	800.503,0496	1.123,451	322°44'41"
0+120,000		120,000	8.271.504,6807	800.507,3336	1.123,684	324°55'00"
0+140,000		140,000	8.271.514,9699	800.524,4640	1.124,593	333°06'06"
0+140,811		140,811	8.271.515,3347	800.525,1883	1.124,629	333°26'01"
0+143,495		143,495	8.271.516,5120	800.527,6003	1.124,756	334°31'56"
0+145,000	PCV2	145,000	8.271.517,1519	800.528,9625	1.124,827	335°08'53"
0+160,000		160,000	8.271.522,7155	800.542,8848	1.125,467	341°17'13"
0+164,539		164,539	8.271.524,1018	800.547,2067	1.125,647	343°08'40"
0+174,721		174,721	8.271.526,6973	800.557,0500	1.126,038	347°18'42"
0+177,739		177,739	8.271.527,3284	800.560,0012	1.126,152	348°32'48"
0+180,000		180,000	8.271.527,7595	800.562,2207	1.126,236	349°28'19"
0+195,000	PTV2	195,000	8.271.529,7057	800.577,0867	1.126,919	355°36'39"
0+197,674	PT1	197,674	8.271.529,8848	800.579,7542	1.127,017	356°42'18"
0+200,000		200,000	8.271.530,0186	800.582,0769	1.127,080	356°42'18"
0+220,000		220,000	8.271.531,1681	800.602,0438	1.127,859	356°42'18"
0+220,190	V3	220,190	8.271.531,1790	800.602,2332	1.127,870	356°42'18"

#### 4.1.6.2.2 – Curvas Horizontais



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 0-RAMO 1



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.271.571,4680	800.505,3915			
			315°59'23"	56,0878	
PI-1	8.271.611,8072	800.466,4224			103°08'35"
			212°50'48"	77,9759	
PI-2	8.271.546,2977	800.424,1288			

Ângulo Central:	103°08'35"
Raio:	44,5000

Tangente:	56,0877
Corda:	69,7212

Dist. Externa:	27,0966
Desenvolv.:	80,1082

Deflexão/Metro:	0,64377280
G. Curva/Metro:	1,28754561

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	0	8.271.571,4680	800.505,3915
Centro		8.271.540,5500	800.473,3864
PC2	0+80,108	8.271.564,6865	800.436,0008

Curva Horizontal: PI-2 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-1	8.271.611,8072	800.466,4224			
			212°50'48"	77,9759	
PI-2	8.271.546,2977	800.424,1288			52°22'57"
			160°27'51"	82,8232	
PI-3	8.271.468,2423	800.451,8244			

Ângulo Central:	52°22'57"
Raio:	44,5000

Tangente:	21,8882
Corda:	39,2818

Dist. Externa:	5,0918
Desenvolv.:	40,6839

Deflexão/Metro:	0,64377280
G. Curva/Metro:	1,28754561

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC2	0+80,108	8.271.564,6865	800.436,0008
Centro		8.271.540,5500	800.473,3864
PC3	0+120,792	8.271.525,6695	800.431,4481



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 0-RAMO 1



Curva Horizontal: PI-3 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-2	8.271.546,2977	800.424,1288			
			160°27'51"	82,8232	
PI-3	8.271.468,2423	800.451,8244			107°43'11"
			52°44'41"	111,0168	
PI-4	8.271.535,4484	800.540,1878			

Ângulo Central:	107°43'11"
Raio:	44,5000

Tangente:	60,9349
Corda:	71,8743

Dist. Externa:	30,9540
Desenvolv.:	83,6628

Deflexão/Metro:	0,64377280
G. Curva/Metro:	1,28754561

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC3	0+120,792	8.271.525,6695	800.431,4481
Centro		8.271.540,5499	800.473,3864
PC4	0+204,455	8.271.505,1304	800.500,3253

Curva Horizontal: PI-4 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-3	8.271.468,2423	800.451,8244			
			52°44'41"	111,0168	
PI-4	8.271.535,4484	800.540,1878			96°45'18"
			315°59'23"	50,0819	
PI-5	8.271.571,4680	800.505,3915			

Ângulo Central:	96°45'18"
Raio:	44,5000

Tangente:	50,0819
Corda:	66,5308

Dist. Externa:	22,4959
Desenvolv.:	75,1468

Deflexão/Metro:	0,64377280
G. Curva/Metro:	1,28754561

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC4	0+204,455	8.271.505,1304	800.500,3253
Centro		8.271.540,5500	800.473,3864
PI-5	0+279,602	8.271.571,4680	800.505,3915



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 0-RAMO 2



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.271.538,1674	800.601,8309			
			266°42'18"	140,7529	
PI-1	8.271.530,0774	800.461,3107			99°06'04"
			5°48'22"	140,7529	
PI-2	8.271.670,1083	800.475,5494			

Ângulo Central:	99°06'04"
Raio:	120,0000

Tangente:	140,7529
Corda:	182,6347

Dist. Externa:	64,9632
Desenvolv.:	207,5566

Deflexão/Metro:	0,23873241
G. Curva/Metro:	0,47746483

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	0	8.271.538,1674	800.601,8309
Centro		8.271.657,9690	800.594,9338
PI-2	0+207,557	8.271.670,1083	800.475,5494



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 0-RAMO 3



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.271.670,8164	800.468,5853			
			185°48'22"	56,5066	
PI-1	8.271.614,5997	800.462,8690			27°02'26"
			212°50'48"	56,5065	
PI-2	8.271.567,1273	800.432,2203			

Ângulo Central:	27°02'26"
Raio:	235,0000

Tangente:	56,5067
Corda:	109,8815

Dist. Externa:	6,6982
Desenvolv.:	110,9079

Deflexão/Metro:	0,12190591
G. Curva/Metro:	0,24381183

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	0	8.271.670,8164	800.468,5853
Centro		8.271.694,5895	800.234,7909
PI-2	0+110,908	8.271.567,1270	800.432,2201





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 0-RAMO 4



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.271.524,1646	800.427,2071			
			160°27'51"	61,5174	
PI-1	8.271.466,1886	800.447,7782			25°20'30"
			185°48'22"	61,5173	
PI-2	8.271.404,9869	800.441,5550			

Ângulo Central:	25°20'30"
Raio:	273,6230

Tangente:	61,5174
Corda:	120,0385

Dist. Externa:	6,8301
Desenvolv.:	121,0225

Deflexão/Metro:	0,10469840
G. Curva/Metro:	0,20939680

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	0	8.271.524,1646	800.427,2071
Centro		8.271.432,6667	800.169,3357
PI-2	0+121,023	8.271.404,9868	800.441,5550



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 0-RAMO 5



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.271.404,2788	800.448,5191			
			5°48'22"	119,3581	
PI-1	8.271.523,0246	800.460,5935			80°53'56"
			86°42'18"	141,8742	
PI-2	8.271.531,1790	800.602,2332			

Ângulo Central:	80°53'56"
Raio:	140,0000

Tangente:	119,3580
Corda:	181,6577

Dist. Externa:	43,9738
Desenvolv.:	197,6735

Deflexão/Metro:	0,20462778
G. Curva/Metro:	0,40925557

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	0	8.271.404,2788	800.448,5191
Centro		8.271.390,1163	800.587,8010
PT1	0+197,674	8.271.529,8848	800.579,7542





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 0-RAMO 1



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	0	1.125,747			
			0,74789	12,4350	
PI-1	0+12,435	1.125,840			1,0055
			1,75334	25,1520	
PI-2	0+37,587	1.126,281			

Parábola Simples

Comprimento:	24,8700	Raio Vertical:	2.473,5177	Constante	-0,0002021413	Dist. Externa:	-0,0313
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Pontos Notáveis

Ponto	Estaca	Cota
1	0	1.125,747
PCCV2	0+24,870	1.126,058

Curva Vertical: 3 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	0+12,435	1.125,840			
			1,75334	25,1520	
PI-2	0+37,587	1.126,281			5,0571
			-3,30377	129,0630	
PI-3	0+166,650	1.122,017			

Parábola Simples

Comprimento:	25,4340	Raio Vertical:	-502,9359	Constante	0,0009941626	Dist. Externa:	0,1608
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV2	0+24,870	1.126,058
PTV2	0+50,304	1.125,861



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 0-RAMO 1



Curva Vertical: 4 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-2	0+37,587	1.126,281			
			-3,30377	129,0630	
PI-3	0+166,650	1.122,017			8,0437
			4,73996	37,8050	
PI-4	0+204,455	1.123,809			

Parábola Simples

Comprimento:	56,7680	Raio Vertical:	705,7430	Constante	-0,0007084732	Dist. Externa:	-0,5708
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Pontos Notáveis

Ponto	Estaca	Cota
PCV3	0+138,266	1.122,955
PTV3	0+195,034	1.123,362

Curva Vertical: 5 - Ponto de Intersecção

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-3	0+166,650	1.122,017			
			4,73996	37,8050	
PI-4	0+204,455	1.123,809			0,4999
			4,24001	39,3810	
PI-5	0+243,836	1.125,479			

Curva Vertical: 6 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-4	0+204,455	1.123,809			
			4,24001	39,3810	
PI-5	0+243,836	1.125,479			3,4900
			0,74999	35,7660	
PI-6	0+279,602	1.125,747			

Parábola Simples

Comprimento:	29,1500	Raio Vertical:	-835,2368	Constante	0,0005986326	Dist. Externa:	0,1272
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Pontos Notáveis

Ponto	Estaca	Cota
PCV5	0+229,261	1.124,861
PTV5	0+258,411	1.125,588



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 0-RAMO 1

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 0-RAMO 2



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	0	1.127,768			
			-3,40000	95,8820	
PI-1	0+95,882	1.124,508			7,4000
			3,99999	111,6750	
PI-2	0+207,557	1.128,975			

Parábola Simples

Comprimento:	120,0000	Raio Vertical:	1.621,6231	Constante	-0,0003083330	Dist. Externa:	-1,1100
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	0+35,882	1.126,548
PTV1	0+155,882	1.126,908



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 0-RAMO 3



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	0	1.128,975			
			-4,00000	62,3680	
PI-1	0+62,368	1.126,480			0,6949
			-3,30507	48,5400	
PI-2	0+110,908	1.124,876			

Parábola Simples

Comprimento:	49,9460	Raio Vertical:	7.187,1779	Constante	-0,0000695683	Dist. Externa:	-0,0434
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	0+37,395	1.127,479
PTV1	0+87,341	1.125,655





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 0-RAMO 4



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	0	1.123,532			
			-3,30462	54,3330	
PI-1	0+54,333	1.121,737			1,6954
			-5,00000	66,6900	
PI-2	0+121,023	1.118,402			

Parábola Simples

Comprimento:	52,0740	Raio Vertical:	-3.071,5265	Constante	0,0001627855	Dist. Externa:	0,1104
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	0+28,296	1.122,597
PTV1	0+80,370	1.120,435



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 0-RAMO 5



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Curva Vertical: 2 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	0	1.118,402			
			5,00000	60,0000	
PI-1	0+60,000	1.121,402			0,7641
			4,23595	110,0000	
PI-2	0+170,000	1.126,062			

Parábola Simples

Comprimento:	40,0000	Raio Vertical:	-5.235,2283	Constante	0,0000955068	Dist. Externa:	0,0382
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	0+40,000	1.120,402
PTV1	0+80,000	1.122,249

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Curva Vertical: 3 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	0+60,000	1.121,402			
			4,23595	110,0000	
PI-2	0+170,000	1.126,062			0,8359
			3,40000	50,1900	
PI-3	0+220,190	1.127,768			

Parábola Simples

Comprimento:	50,0000	Raio Vertical:	-5.981,2515	Constante	0,0000835945	Dist. Externa:	0,0522
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Pontos Notáveis

Ponto	Estaca	Cota
PCV2	0+145,000	1.125,003
PTV2	0+195,000	1.126,912

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#### 4.1.6.2.4 – Greide + Superelevação



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 0-RAMO 1



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
0	PC1	1	8.271.571,4680	800.505,3915	1.125,756	225°59'23"	1.125,747	-2,0000	2,0000
0+20,000			8.271.582,3025	800.488,7805	1.125,499	200°14'20"	1.125,977	-2,0000	2,0000
0+24,870		PCCV2	8.271.583,7341	800.484,1282	1.125,394	193°58'07"	1.126,058	-2,0000	2,0000
0+27,280			8.271.584,2522	800.481,7749	1.125,365	190°51'56"	1.126,095	-2,0000	2,0000
0+40,000			8.271.584,8443	800.469,1120	1.125,516	174°29'17"	1.126,096	-2,0000	2,0000
0+47,120			8.271.583,5975	800.462,1097	1.125,664	165°19'14"	1.125,956	-2,0000	2,0000
0+52,648			8.271.581,8685	800.456,8628	1.125,397	158°12'11"	1.125,783	-2,0000	2,0000
0+57,358			8.271.579,8917	800.452,5901	1.124,359	152°08'20"	1.125,628	-2,0000	2,0000
0+60,000			8.271.578,5884	800.450,2924	1.124,226	148°44'14"	1.125,541	-2,0000	1,7677
0+80,000			8.271.564,7775	800.436,0597	1.122,791	122°59'10"	1.124,880	-2,0000	0,0096
0+80,108	PC2		8.271.564,6865	800.436,0008	1.122,784	122°50'48"	1.124,876	-2,0000	0,0001
0+80,109			8.271.564,6857	800.436,0003	1.122,784	122°50'44"	1.124,876	-2,0000	0,0000
0+100,000			8.271.546,1544	800.429,2407	1.120,575	97°14'07"	1.124,219	-2,0000	1,9558
0+100,450			8.271.545,7075	800.429,1862	1.120,564	96°39'20"	1.124,204	-2,0000	2,0000
0+120,000			8.271.526,4183	800.431,1898	1.121,376	71°29'03"	1.123,558	-2,0000	0,0779
0+120,791			8.271.525,6704	800.431,4478	1.121,515	70°27'56"	1.123,532	-2,0000	0,0001
0+120,792	PC3		8.271.525,6695	800.431,4481	1.121,515	70°27'52"	1.123,532	-2,0000	0,0000
0+140,000			8.271.509,4891	800.441,5199	1.121,541	45°44'00"	1.122,900	-2,0000	1,4221
0+147,806			8.271.504,4044	800.447,4298	1.122,057	35°40'57"	1.122,704	-2,0000	2,0000
0+150,450			8.271.502,9268	800.449,6219	1.122,432	32°16'42"	1.122,657	-2,0000	2,0000
0+160,000			8.271.498,7290	800.458,1792	1.122,372	19°58'57"	1.122,571	-2,0000	2,0000
0+170,056			8.271.496,3849	800.467,9364	1.122,071	7°02'05"	1.122,621	-2,0000	2,0000
0+178,395			8.271.496,1428	800.476,2597	1.122,256	356°17'52"	1.122,770	-2,0000	2,0000
0+180,000			8.271.496,2753	800.477,8589	1.122,256	354°13'54"	1.122,810	-2,0000	2,0000
0+182,846			8.271.496,6517	800.480,6797	1.122,332	350°34'01"	1.122,890	-2,0000	2,0000
0+200,000			8.271.502,6153	800.496,6503	1.123,251	328°28'51"	1.123,598	-2,0000	2,0000
0+204,455	PC4	PIV4	8.271.505,1304	800.500,3253	1.123,442	322°44'41"	1.123,809	-2,0000	2,0000
0+220,000			8.271.516,4899	800.510,8212	1.124,143	302°43'47"	1.124,468	-2,0000	2,0000
0+229,815			8.271.525,2625	800.515,1781	1.124,572	290°05'33"	1.124,884	-2,0000	2,0000
0+232,278			8.271.527,5979	800.515,9598	1.124,661	286°55'17"	1.124,983	-2,0000	2,0000
0+240,000			8.271.535,1431	800.517,5567	1.124,974	276°58'44"	1.125,247	-2,0000	2,0000
0+252,065			8.271.547,1700	800.517,3912	1.125,081	261°26'41"	1.125,516	-2,0000	2,0000
0+254,053			8.271.549,1286	800.517,0517	1.125,202	258°53'06"	1.125,544	-2,0000	2,0000
0+258,411		PTV5	8.271.553,3569	800.516,0037	1.125,163	253°16'26"	1.125,588	-2,0000	2,0000
0+260,000			8.271.554,8703	800.515,5193	1.125,084	251°13'40"	1.125,600	-2,0000	2,0000
0+279,602	PI-5	V6	8.271.571,4680	800.505,3915	1.125,756	225°59'23"	1.125,747	-2,0000	2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVÇÃO

DISP KM 0-RAMO 2



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
0		V0	8.271.538,1674	800.601,8309	1.127,744	176°42'18"	1.127,768	2,0000	-2,0000
0+20,000			8.271.538,6832	800.581,8607	1.127,128	186°15'16"	1.127,088	2,0000	-2,0000
0+35,882		PCV1	8.271.541,4516	800.566,2336	1.126,654	193°50'15"	1.126,548	2,0000	-2,0000
0+40,000			8.271.542,5049	800.562,2528	1.126,418	195°48'13"	1.126,413	2,0000	-2,0000
0+41,384			8.271.542,8895	800.560,9233	1.126,327	196°27'52"	1.126,370	2,0000	-2,0000
0+44,606			8.271.543,8441	800.557,8461	1.126,278	198°00'10"	1.126,275	2,0000	-2,0000
0+60,000			8.271.549,5265	800.543,5506	1.126,022	205°21'11"	1.125,907	2,0000	-2,0000
0+64,913			8.271.551,7205	800.539,1551	1.125,843	207°41'55"	1.125,821	2,0000	-2,0000
0+77,026			8.271.557,8822	800.528,7323	1.125,855	213°28'56"	1.125,671	2,0000	-2,0000
0+80,000			8.271.559,5535	800.526,2724	1.125,604	214°54'08"	1.125,648	2,0000	-2,0000
0+81,658			8.271.560,5115	800.524,9192	1.125,599	215°41'38"	1.125,638	2,0000	-2,0000
0+100,000			8.271.572,3078	800.510,8971	1.126,084	224°27'06"	1.125,636	2,0000	-2,0000
0+103,222			8.271.574,5948	800.508,6276	1.126,100	225°59'24"	1.125,657	2,0000	-2,0000
0+120,000			8.271.587,4362	800.497,8507	1.125,931	234°00'03"	1.125,870	2,0000	-2,0000
0+128,689			8.271.594,6445	800.493,0024	1.125,986	238°08'58"	1.126,048	2,0000	-2,0000
0+131,288			8.271.596,8668	800.491,6549	1.126,008	239°23'26"	1.126,111	2,0000	-2,0000
0+140,000			8.271.604,5192	800.487,4948	1.126,104	243°33'00"	1.126,351	2,0000	-2,0000
0+152,218			8.271.615,7162	800.482,6186	1.126,310	249°23'02"	1.126,766	2,0000	-2,0000
0+155,882		PTV1	8.271.619,1647	800.481,3810		251°08'00"	1.126,908	2,0000	-2,0000
0+160,000			8.271.623,0836	800.480,1165	1.126,581	253°05'58"	1.127,073	2,0000	-2,0000
0+165,989			8.271.628,8550	800.478,5191	1.126,805	255°57'32"	1.127,312	2,0000	-2,0000
0+170,669			8.271.633,4161	800.477,4725	1.126,974	258°11'37"	1.127,499	2,0000	-2,0000
0+180,000			8.271.642,6147	800.475,9201	1.127,677	262°38'55"	1.127,873	2,0000	-2,0000
0+200,000			8.271.662,5714	800.475,0221	1.128,630	272°11'53"	1.128,673	2,0000	-2,0000
0+207,557		V2	8.271.670,1083	800.475,5494	1.128,941	275°48'22"	1.128,975	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 0-RAMO 3



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
0		V0	8.271.670,8164	800.468,5853	1.128,955	95°48'22"	1.128,975	2,0000	-2,0000
0+20,000			8.271.651,0291	800.465,7183	1.128,139	100°40'56"	1.128,175	2,0000	-2,0000
0+37,395		PCV1	8.271.634,0704	800.461,8645	1.127,400	104°55'24"	1.127,479	2,0000	-2,0000
0+40,000			8.271.631,5570	800.461,1797	1.127,285	105°33'31"	1.127,375	2,0000	-2,0000
0+42,221			8.271.629,4203	800.460,5739	1.127,031	106°06'00"	1.127,288	2,0000	-2,0000
0+60,000			8.271.612,5413	800.455,0023	1.125,382	110°26'05"	1.126,611	2,0000	-2,0000
0+61,622			8.271.611,0233	800.454,4308	1.125,308	110°49'49"	1.126,551	2,0000	-2,0000
0+80,000			8.271.594,1195	800.447,2309	1.124,566	115°18'40"	1.125,901	2,0000	-2,0000
0+82,178			8.271.592,1549	800.446,2906	1.124,434	115°50'31"	1.125,827	2,0000	-2,0000
0+87,341		PTV1	8.271.587,5333	800.443,9893	1.124,118	117°06'03"	1.125,655	2,0000	-2,0000
0+100,000			8.271.576,4249	800.437,9217	1.123,321	120°11'14"	1.125,237	2,0000	-2,0000
0+110,908		V2	8.271.567,1273	800.432,2203	1.122,684	122°50'48"	1.124,876	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 0-RAMO 4



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
0		V0	8.271.524,1646	800.427,2071	1.120,290	70°27'51"	1.123,532	0,0000	0,0000
0+20,000			8.271.505,0884	800.433,2005	1.120,927	74°39'08"	1.122,871	1,4136	-1,4136
0+28,296		PCV1	8.271.497,0562	800.435,2747	1.120,853	76°23'22"	1.122,597	2,0000	-2,0000
0+31,267			8.271.494,1649	800.435,9581	1.120,824	77°00'41"	1.122,497	2,0000	-2,0000
0+40,000			8.271.485,6255	800.437,7848	1.120,723	78°50'25"	1.122,188	2,0000	-2,0000
0+52,629			8.271.473,1833	800.439,9423	1.120,454	81°29'05"	1.121,696	2,0000	-2,0000
0+60,000			8.271.465,8797	800.440,9355	1.120,287	83°01'41"	1.121,386	2,0000	-2,0000
0+75,134			8.271.450,8145	800.442,3562	1.120,348	86°11'50"	1.120,692	2,0000	-2,0000
0+80,000			8.271.445,9566	800.442,6358	1.120,075	87°12'58"	1.120,453	2,0000	-2,0000
0+80,370		PTV1	8.271.445,5870	800.442,6535	1.120,074	87°17'37"	1.120,435	2,0000	-2,0000
0+100,000			8.271.425,9625	800.442,8766	1.119,337	91°24'14"	1.119,453	2,0000	-2,0000
0+120,000			8.271.406,0042	800.441,6566	1.118,449	95°35'31"	1.118,453	2,0000	-2,0000
0+121,023		V2	8.271.404,9869	800.441,5550	1.118,400	95°48'22"	1.118,402	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 0-RAMO 5



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
0		V0	8.271.404,2788	800.448,5191	1.118,391	275°48'22"	1.118,402	2,0000	-2,0000
0+20,000			8.271.423,9643	800.451,9543	1.119,298	283°59'28"	1.119,402	2,0000	-2,0000
0+39,761			8.271.442,7388	800.458,0671	1.120,310	292°04'42"	1.120,390	2,0000	-2,0000
0+40,000		PCV1	8.271.442,9602	800.458,1571	1.120,321	292°10'34"	1.120,402	2,0000	-2,0000
0+44,839			8.271.447,4088	800.460,0607	1.120,505	294°09'24"	1.120,642	2,0000	-2,0000
0+60,000			8.271.460,8795	800.467,0013	1.121,003	300°21'41"	1.121,364	2,0000	-2,0000
0+63,489			8.271.463,8677	800.468,8021	1.121,115	301°47'21"	1.121,524	2,0000	-2,0000
0+80,000		PTV1	8.271.477,3571	800.478,3065	1.121,823	308°32'47"	1.122,249	2,0000	-2,0000
0+87,817			8.271.483,3317	800.483,3458	1.122,300	311°44'44"	1.122,580	2,0000	-2,0000
0+92,590			8.271.486,8380	800.486,5838	1.122,595	313°41'56"	1.122,782	2,0000	-2,0000
0+100,000			8.271.492,0574	800.491,8425	1.122,984	316°43'54"	1.123,096	2,0000	-2,0000
0+114,693			8.271.501,5488	800.503,0496	1.123,451	322°44'41"	1.123,719	2,0000	-2,0000
0+120,000			8.271.504,6807	800.507,3336	1.123,684	324°55'00"	1.123,944	2,0000	-2,0000
0+140,000			8.271.514,9699	800.524,4640	1.124,593	333°06'06"	1.124,791	2,0000	-2,0000
0+140,811			8.271.515,3347	800.525,1883	1.124,629	333°26'01"	1.124,825	2,0000	-2,0000
0+143,495			8.271.516,5120	800.527,6003	1.124,756	334°31'56"	1.124,939	2,0000	-2,0000
0+145,000		PCV2	8.271.517,1519	800.528,9625	1.124,827	335°08'53"	1.125,003	2,0000	-2,0000
0+160,000			8.271.522,7155	800.542,8848	1.125,467	341°17'13"	1.125,619	2,0000	-2,0000
0+164,539			8.271.524,1018	800.547,2067	1.125,647	343°08'40"	1.125,798	2,0000	-2,0000
0+174,721			8.271.526,6973	800.557,0500	1.126,038	347°18'42"	1.126,188	2,0000	-2,0000
0+177,739			8.271.527,3284	800.560,0012	1.126,152	348°32'48"	1.126,300	2,0000	-2,0000
0+180,000			8.271.527,7595	800.562,2207	1.126,236	349°28'19"	1.126,383	2,0000	-2,0000
0+195,000		PTV2	8.271.529,7057	800.577,0867	1.126,919	355°36'39"	1.126,912	2,0000	-2,0000
0+197,674	PT1		8.271.529,8848	800.579,7542	1.127,017	356°42'18"	1.127,002	2,0000	-2,0000
0+200,000			8.271.530,0186	800.582,0769	1.127,080	356°42'18"	1.127,082	2,0000	-2,0000
0+220,000			8.271.531,1681	800.602,0438	1.127,859	356°42'18"	1.127,762	2,0000	-2,0000
0+220,190		V3	8.271.531,1790	800.602,2332	1.127,870	356°42'18"	1.127,768	2,0000	-2,0000



#### **4.1.6.3 – Relatórios Dispositivo Km 5 (Entronc. DF-120/Estrada Municipal)**





RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DISP KM 5-RAMO 1



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
5		5000,000	8.273.216,9319	805.557,8785	1.282,256	25°59'10"
5+11,275	PCV1	5011,275	8.273.213,7206	805.568,6342	1.282,534	7°15'41"
5+20,000		5020,000	8.273.213,7182	805.577,3360	1.282,789	352°46'16"
5+22,250		5022,250	8.273.214,0738	805.579,5573	1.282,797	349°02'04"
5+24,119		5024,119	8.273.214,4789	805.581,3817	1.282,801	345°55'50"
5+27,931		5027,931	8.273.215,6077	805.585,0206	1.282,837	339°35'59"
5+31,475	PTV1	5031,475	8.273.217,0114	805.588,2731	1.282,879	333°42'51"
5+40,000		5040,000	8.273.221,6879	805.595,3750	1.283,451	319°33'23"
5+46,721	PC2	5046,721	8.273.226,5173	805.600,0346	1.283,548	308°23'37"
5+46,722	PCV2	5046,722	8.273.226,5181	805.600,0352	1.283,548	308°23'31"
5+60,000		5060,000	8.273.238,2370	805.606,1011	1.283,131	286°20'29"
5+67,455	PCCV3	5067,455	8.273.245,5615	805.607,4125	1.283,212	273°57'35"
5+69,273		5069,273	8.273.247,3777	805.607,4902	1.283,261	270°56'26"
5+76,248		5076,248	8.273.254,3158	805.606,9013	1.283,341	259°21'24"
5+80,000		5080,000	8.273.257,9579	805.606,0095	1.283,406	253°07'35"
5+80,278		5080,278	8.273.258,2241	805.605,9276	1.283,398	252°39'50"
5+82,446	PTV3	5082,446	8.273.260,2719	805.605,2170	1.283,337	249°03'48"
5+97,982	PC3	5097,982	8.273.273,0671	805.596,6395	1.282,829	223°15'49"
5+97,983		5097,983	8.273.273,0678	805.596,6388	1.282,829	223°15'42"
5+100,000		5100,000	8.273.274,4067	805.595,1301	1.282,780	219°54'41"
5+120,000		5120,000	8.273.282,2085	805.577,0179	1.282,294	186°41'47"
5+128,698		5128,698	8.273.282,1289	805.568,3436	1.282,051	172°15'07"
5+140,000		5140,000	8.273.278,8142	805.557,5910	1.281,765	153°28'53"
5+159,395		5159,395	8.273.265,8529	805.543,5072	1.281,492	121°16'19"
5+159,396	PC4	5159,396	8.273.265,8514	805.543,5064	1.281,492	121°16'09"
5+160,000		5160,000	8.273.265,3328	805.543,1976	1.281,493	120°16'00"
5+176,585	PCV4	5176,585	8.273.249,5826	805.538,5338	1.281,657	92°43'21"
5+180,000		5180,000	8.273.246,1694	805.538,5405	1.281,724	87°03'06"
5+180,616		5180,616	8.273.245,5542	805.538,5777	1.281,737	86°01'41"
5+182,559		5182,559	8.273.243,6207	805.538,7668	1.281,707	82°48'04"
5+193,543		5193,543	8.273.233,1237	805.541,8402	1.281,453	64°33'34"
5+197,772		5197,772	8.273.229,4255	805.543,8861	1.281,767	57°32'11"
5+200,000		5200,000	8.273.227,5859	805.545,1416	1.281,937	53°50'12"
5+201,803	PCCV5	5201,803	8.273.226,1584	805.546,2434	1.282,056	50°50'30"
5+212,739	PTV5	5212,739	8.273.218,9053	805.554,3668	1.282,140	32°40'48"
5+216,770	V6	5216,770	8.273.216,9319	805.557,8785	1.282,256	25°59'11"



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO  
DISP KM 5-RAMO 2

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
5		5000,000	8.273.223,1817	805.484,6287	1.279,989	350°27'03"
5+20,000		5020,000	8.273.224,8163	805.504,5378	1.280,364	0°09'43"
5+28,688		5028,688	8.273.224,4721	805.513,2170	1.280,716	4°22'49"
5+32,617		5032,617	8.273.224,1068	805.517,1288	1.280,831	6°17'17"
5+40,000		5040,000	8.273.223,0692	805.524,4373	1.281,198	9°52'23"
5+41,102	PCV1	5041,102	8.273.222,8752	805.525,5221	1.281,258	10°24'29"
5+48,905		5048,905	8.273.221,2129	805.533,1445	1.281,742	14°11'49"
5+53,572		5053,572	8.273.219,9791	805.537,6452	1.281,971	16°27'47"
5+60,000		5060,000	8.273.217,9905	805.543,7570	1.282,025	19°35'03"
5+61,102	PTV1	5061,102	8.273.217,6162	805.544,7935	1.282,034	20°07'09"
5+73,185		5073,185	8.273.212,8869	805.555,9067	1.282,322	25°59'10"
5+80,000		5080,000	8.273.209,7256	805.561,9431	1.282,516	29°17'43"
5+96,360		5096,360	8.273.200,7586	805.575,6111	1.282,987	37°14'21"
5+98,454		5098,454	8.273.199,4767	805.577,2669	1.283,038	38°15'21"
5+100,000		5100,000	8.273.198,5116	805.578,4746	1.283,075	39°00'23"
5+103,085		5103,085	8.273.196,5387	805.580,8462	1.283,150	40°30'16"
5+106,004		5106,004	8.273.194,6156	805.583,0420	1.283,222	41°55'18"
5+120,000		5120,000	8.273.184,6697	805.592,8775	1.283,572	48°43'03"
5+136,117	V2	5136,117	8.273.171,8709	805.602,6521	1.283,984	56°32'36"

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RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DISP KM 5-RAMO 3



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
5	PI-0	5000,000	8.273.175,7301	805.608,4922	1.284,542	236°32'36"
5+11,919	PC1	5011,919	8.273.185,6743	805.601,9211	1.284,035	236°32'36"
5+20,000		5020,000	8.273.192,8985	805.598,3470	1.284,031	250°48'35"
5+22,344	PCV1	5022,344	8.273.195,1383	805.597,6570	1.283,982	254°56'54"
5+28,245		5028,245	8.273.200,9445	805.596,6497	1.283,863	265°21'58"
5+30,750		5030,750	8.273.203,4466	805.596,5438	1.283,820	269°47'19"
5+34,905		5034,905	8.273.207,5912	805.596,7941	1.283,760	277°07'26"
5+38,257		5038,257	8.273.210,8900	805.597,3807	1.283,724	283°02'30"
5+40,000		5040,000	8.273.212,5764	805.597,8194	1.283,709	286°07'07"
5+52,617		5052,617	8.273.223,7223	805.603,5614	1.283,697	308°23'37"
5+60,000		5060,000	8.273.229,2563	805.608,4428	1.283,710	314°26'11"
5+61,662	PTV1	5061,662	8.273.230,4293	805.609,6206	1.283,701	315°47'49"
5+73,630		5073,630	8.273.238,0012	805.618,8700	1.283,623	325°35'34"
5+75,573		5075,573	8.273.239,0768	805.620,4881	1.283,621	327°10'59"
5+80,000		5080,000	8.273.241,3566	805.624,2816	1.283,649	330°48'23"
5+83,747		5083,747	8.273.243,0960	805.627,6003	1.283,698	333°52'25"
5+86,997		5086,997	8.273.244,4589	805.630,5504	1.283,756	336°32'02"
5+100,000		5100,000	8.273.248,5024	805.642,8888	1.284,063	347°10'36"
5+105,032		5105,032	8.273.249,4421	805.647,8318	1.284,210	351°17'46"
5+116,647	V2	5116,647	8.273.251,1997	805.659,3126	1.284,548	351°17'46"



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO  
DISP KM 5-RAMO 4

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
5	PC1	5000,000	8.273.258,1196	805.658,2567	1.284,508	171°19'29"
5+20,000		5020,000	8.273.257,9491	805.638,3254	1.283,942	187°41'42"
5+28,764	PCV1	5028,764	8.273.259,6625	805.629,7364	1.284,018	194°52'07"
5+32,032		5032,032	8.273.260,5745	805.626,5985	1.283,864	197°32'36"
5+40,000		5040,000	8.273.263,4030	805.619,1541	1.283,616	204°03'55"
5+41,359		5041,359	8.273.263,9692	805.617,9186	1.283,603	205°10'40"
5+45,626	PTV1	5045,626	8.273.265,9011	805.614,1147	1.283,458	208°40'13"
5+60,000		5060,000	8.273.274,0392	805.602,2971	1.282,962	220°26'08"
5+63,455	V2	5063,455	8.273.276,3441	805.599,7237	1.282,870	223°15'49"

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO  
DISP KM 5-RAMO 5

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
5		5000,000	8.273.268,1872	805.539,6600	1.281,345	121°16'09"
5+20,000		5020,000	8.273.252,5294	805.527,2975	1.281,280	135°18'59"
5+21,711	PCV1	5021,711	8.273.251,3391	805.526,0684	1.281,269	136°31'05"
5+23,819		5023,819	8.273.249,9084	805.524,5203	1.281,253	137°59'56"
5+37,769		5037,769	8.273.241,5035	805.513,4079	1.281,248	147°47'49"
5+40,000		5040,000	8.273.240,3405	805.511,5041	1.281,225	149°21'50"
5+41,565	PTV1	5041,565	8.273.239,5560	805.510,1499	1.281,130	150°27'47"
5+60,000		5060,000	8.273.232,3496	805.493,2244	1.280,230	163°24'40"
5+70,022	V2	5070,022	8.273.230,0847	805.483,4674	1.279,987	170°27'03"

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#### 4.1.6.3.2 – Curvas Horizontais





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 5-RAMO 1



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.216,9319	805.557,8785			
			115°59'10"	27,7350	
PI-1	8.273.204,7797	805.582,8095			77°35'33"
			38°23'37"	59,4206	
PI-2	8.273.251,3513	805.619,7133			

Ângulo Central:	77°35'33"
Raio:	34,5000

Tangente:	27,7350
Corda:	43,2322

Dist. Externa:	9,7660
Desenvolv.:	46,7215

Deflexão/Metro:	0,83037362
G. Curva/Metro:	1,66074723

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	5	8.273.216,9319	805.557,8785
Centro		8.273.247,9439	805.572,9948
PC2	5+46,721	8.273.226,5173	805.600,0346

Curva Horizontal: PI-2 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-1	8.273.204,7797	805.582,8095			
			38°23'37"	59,4206	
PI-2	8.273.251,3513	805.619,7133			85°07'49"
			313°15'49"	74,2852	
PI-3	8.273.302,2630	805.565,6181			

Ângulo Central:	85°07'49"
Raio:	34,5000

Tangente:	31,6856
Corda:	46,6735

Dist. Externa:	12,3426
Desenvolv.:	51,2602

Deflexão/Metro:	0,83037362
G. Curva/Metro:	1,66074723

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC2	5+46,721	8.273.226,5173	805.600,0346
Centro		8.273.247,9439	805.572,9948
PC3	5+97,982	8.273.273,0671	805.596,6395



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 5-RAMO 1



Curva Horizontal: PI-3 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-2	8.273.251,3513	805.619,7133			
			313°15'49"	74,2852	
PI-3	8.273.302,2630	805.565,6181			101°59'40"
			211°16'09"	80,4369	
PI-4	8.273.233,5105	805.523,8666			

Ângulo Central:	101°59'40"
Raio:	34,5000

Tangente:	42,5996
Corda:	53,6209

Dist. Externa:	20,3177
Desenvolv.:	61,4147

Deflexão/Metro:	0,83037362
G. Curva/Metro:	1,66074723

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC3	5+97,982	8.273.273,0671	805.596,6395
Centro		8.273.247,9439	805.572,9948
PC4	5+159,396	8.273.265,8514	805.543,5064

Curva Horizontal: PI-4 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-3	8.273.302,2630	805.565,6181			
			211°16'09"	80,4369	
PI-4	8.273.233,5105	805.523,8666			95°16'58"
			115°59'11"	37,8373	
PI-5	8.273.216,9319	805.557,8785			

Ângulo Central:	95°16'58"
Raio:	34,5000

Tangente:	37,8373
Corda:	50,9871

Dist. Externa:	16,7046
Desenvolv.:	57,3735

Deflexão/Metro:	0,83037362
G. Curva/Metro:	1,66074723

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC4	5+159,396	8.273.265,8514	805.543,5064
Centro		8.273.247,9439	805.572,9949
PI-5	5+216,770	8.273.216,9319	805.557,8785



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 5-RAMO 2



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.223,1817	805.484,6287			
			80°27'03"	76,7657	
PI-1	8.273.235,9168	805.560,3307			66°05'33"
			146°32'36"	76,7657	
PI-2	8.273.171,8709	805.602,6521			

Ângulo Central:	66°05'33"
Raio:	118,0000

Tangente:	76,7657
Corda:	128,6947

Dist. Externa:	22,7728
Desenvolv.:	136,1169

Deflexão/Metro:	0,24277873
G. Curva/Metro:	0,48555745

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	5	8.273.223,1817	805.484,6287
Centro		8.273.106,8167	805.504,2044
PI-2	5+136,117	8.273.171,8709	805.602,6521



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 5-RAMO 3



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.175,7301	805.608,4922			
			326°32'36"	35,4337	
PI-1	8.273.205,2926	805.588,9575			71°51'01"
			38°23'37"	51,0196	
PI-2	8.273.245,2798	805.620,6437			

Ângulo Central:	71°51'01"
Raio:	32,4540

Tangente:	23,5145
Corða:	38,0833

Dist. Externa:	7,6233
Desenvolv.:	40,6981

Deflexão/Metro:	0,88272292
G. Curva/Metro:	1,76544585

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	5+11,919	8.273.185,6743	805.601,9211
Centro		8.273.203,5664	805.628,9976
PC2	5+52,617	8.273.223,7223	805.603,5614

Curva Horizontal: PI-2 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-1	8.273.205,2926	805.588,9575			
			38°23'37"	51,0196	
PI-2	8.273.245,2798	805.620,6437			42°54'08"
			81°17'46"	39,1194	
PI-3	8.273.251,1997	805.659,3126			

Ângulo Central:	42°54'09"
Raio:	70,0000

Tangente:	27,5048
Corða:	51,1991

Dist. Externa:	5,2098
Desenvolv.:	52,4151

Deflexão/Metro:	0,40925557
G. Curva/Metro:	0,81851114

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC2	5+52,617	8.273.223,7223	805.603,5614
Centro		8.273.180,2482	805.658,4249
PT2	5+105,032	8.273.249,4421	805.647,8318



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 5-RAMO 4



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.258,1196	805.658,2567			
			261°19'29"	34,0949	
PI-1	8.273.252,9770	805.624,5519			51°56'19"
			313°15'49"	34,0949	
PI-2	8.273.276,3441	805.599,7237			

Ângulo Central:	51°56'19"
Raio:	70,0000

Tangente:	34,0949
Corda:	61,3046

Dist. Externa:	7,8618
Desenvolv.:	63,4550

Deflexão/Metro:	0,40925557
G. Curva/Metro:	0,81851114

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	5	8.273.258,1196	805.658,2567
Centro		8.273.327,3187	805.647,6985
PI-2	5+63,455	8.273.276,3441	805.599,7237



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 5-RAMO 5



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.268,1872	805.539,6600			
			211°16'09"	37,3323	
PI-1	8.273.236,2779	805.520,2824			49°10'54"
			260°27'03"	37,3322	
PI-2	8.273.230,0847	805.483,4674			

Ângulo Central:	49°10'54"
Raio:	81,5750

Tangente:	37,3321
Corda:	67,8924

Dist. Externa:	8,1366
Desenvolv.:	70,0224

Deflexão/Metro:	0,35118467
G. Curva/Metro:	0,70236935

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	5	8.273.268,1872	805.539,6600
Centro		8.273.310,5293	805.469,9347
PI-2	5+70,022	8.273.230,0847	805.483,4676





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 5-RAMO 1



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	5	1.282,402			
			2,99995	21,3750	
PI-1	5+21,375	1.283,043			1,7700
			1,23000	35,7130	
PI-2	5+57,088	1.283,483			

Parábola Simples

Comprimento:	20,2000	Raio Vertical:	-1.141,2733	Constante	0,0004381072	Dist. Externa:	0,0447
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	5+11,275	1.282,740
PTV1	5+31,475	1.283,167

Curva Vertical: 3 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	5+21,375	1.283,043			
			1,23000	35,7130	
PI-2	5+57,088	1.283,483			0,5883
			1,81827	17,8620	
PI-3	5+74,950	1.283,807			

Parábola Simples

Comprimento:	20,7330	Raio Vertical:	3.524,3832	Constante	-0,0001418688	Dist. Externa:	-0,0152
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Pontos Notáveis

Ponto	Estaca	Cota
PCV2	5+46,722	1.283,355
PCCV3	5+67,455	1.283,671





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 5-RAMO 1



Curva Vertical: 4 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-2	5+57,088	1.283,483			
			1,81827	17,8620	
PI-3	5+74,950	1.283,807			3,9383
			-2,12004	114,2440	
PI-4	5+189,194	1.281,385			

Parábola Simples

Comprimento:	14,9910	Raio Vertical:	-380,6450	Constante	0,0013135597	Dist. Externa:	0,0738
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV3	5+67,455	1.283,671
PTV3	5+82,446	1.283,648

Curva Vertical: 5 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-3	5+74,950	1.283,807			
			-2,12004	114,2440	
PI-4	5+189,194	1.281,385			6,1681
			4,04802	18,0770	
PI-5	5+207,271	1.282,117			

Parábola Simples

Comprimento:	25,2180	Raio Vertical:	408,8483	Constante	-0,0012229475	Dist. Externa:	-0,1944
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Pontos Notáveis

Ponto	Estaca	Cota
PCV4	5+176,585	1.281,653
PCCV5	5+201,803	1.281,896



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 5-RAMO 1



Curva Vertical: 6 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-4	5+189,194	1.281,385			
			4,04802	18,0770	
PI-5	5+207,271	1.282,117			1,0480
			3,00000	9,4990	
PI-6	5+216,770	1.282,402			

Parábola Simples

Comprimento:	10,9360	Raio Vertical:	-1.043,4947	Constante	0,0004791591	Dist. Externa:	0,0143
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV5	5+201,803	1.281,896
PTV5	5+212,739	1.282,281



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 5-RAMO 2



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	5	1.280,372			
			2,50000	51,1020	
PI-1	5+51,102	1.281,650			0,5000
			3,00000	85,0150	
PI-2	5+136,117	1.284,200			

Parábola Simples

Comprimento:	20,0000	Raio Vertical:	4.000,0000	Constante	-0,0001250000	Dist. Externa:	-0,0125
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	5+41,102	1.281,400
PTV1	5+61,102	1.281,950



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 5-RAMO 3



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	5	1.284,200			
			-3,00002	42,0030	
PI-1	5+42,003	1.282,940			5,5000
			2,50000	74,6440	
PI-2	5+116,647	1.284,806			

Parábola Simples

Comprimento:	39,3180	Raio Vertical:	714,8696	Constante	-0,0006994282	Dist. Externa:	-0,2703
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	5+22,344	1.283,530
PTV1	5+61,662	1.283,431



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 5-RAMO 4



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	5	1.284,806			
			-2,49999	37,1950	
PI-1	5+37,195	1.283,876			0,3784
			-2,12159	26,2600	
PI-2	5+63,455	1.283,319			

Parábola Simples

Comprimento:	16,8620	Raio Vertical:	4.456,1925	Constante	-0,0001122034	Dist. Externa:	-0,0080
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	5+28,764	1.284,087
PTV1	5+45,626	1.283,697



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 5-RAMO 5



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	5	1.282,017			
			-2,16635	31,6380	
PI-1	5+31,638	1.281,332			0,3337
			-2,50003	38,3840	
PI-2	5+70,022	1.280,372			

Parábola Simples

Comprimento:	19,8540	Raio Vertical:	-5.950,0929	Constante	0,0000840323	Dist. Externa:	0,0083
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	5+21,711	1.281,547
PTV1	5+41,565	1.281,083

#### 4.1.6.3.4 – Greide + Superelevação



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 5-RAMO 1



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
5		V0	8.273.216,9319	805.557,8785	1.282,256	25°59'10"	1.282,402	-2,0000	2,0000
5+11,275		PCV1	8.273.213,7206	805.568,6342	1.282,534	7°15'41"	1.282,740	-2,0000	2,0000
5+20,000			8.273.213,7182	805.577,3360	1.282,789	352°46'16"	1.282,969	-2,0000	2,0000
5+22,250			8.273.214,0738	805.579,5573	1.282,797	349°02'04"	1.283,017	-2,0000	2,0000
5+24,119			8.273.214,4789	805.581,3817	1.282,801	345°55'50"	1.283,053	-2,0000	2,0000
5+27,931			8.273.215,6077	805.585,0206	1.282,837	339°35'59"	1.283,118	-2,0000	2,0000
5+31,475		PTV1	8.273.217,0114	805.588,2731	1.282,879	333°42'51"	1.283,167	-2,0000	2,0000
5+40,000			8.273.221,6879	805.595,3750	1.283,451	319°33'23"	1.283,272	-2,0000	2,0000
5+46,721	PC2		8.273.226,5173	805.600,0346	1.283,548	308°23'37"	1.283,355	-2,0000	2,0000
5+46,722		PCV2	8.273.226,5181	805.600,0352	1.283,548	308°23'31"	1.283,355	-2,0000	2,0000
5+60,000			8.273.238,2370	805.606,1011	1.283,131	286°20'29"	1.283,543	-2,0000	2,0000
5+67,455		PCCV3	8.273.245,5615	805.607,4125	1.283,212	273°57'35"	1.283,671	-2,0000	2,0000
5+69,273			8.273.247,3777	805.607,4902	1.283,261	270°56'26"	1.283,700	-2,0000	2,0000
5+76,248			8.273.254,3158	805.606,9013	1.283,341	259°21'24"	1.283,729	-2,0000	2,0000
5+80,000			8.273.257,9579	805.606,0095	1.283,406	253°07'35"	1.283,692	-2,0000	2,0000
5+80,278			8.273.258,2241	805.605,9276	1.283,398	252°39'50"	1.283,688	-2,0000	2,0000
5+82,446		PTV3	8.273.260,2719	805.605,2170	1.283,337	249°03'48"	1.283,648	-2,0000	1,7551
5+97,982	PC3		8.273.273,0671	805.596,6395	1.282,829	223°15'49"	1.283,319	-2,0000	0,0000
5+97,983			8.273.273,0678	805.596,6388	1.282,829	223°15'42"	1.283,319	-2,0000	0,0001
5+100,000			8.273.274,4067	805.595,1301	1.282,780	219°54'41"	1.283,276	-2,0000	0,1314
5+120,000			8.273.282,2085	805.577,0179	1.282,294	186°41'47"	1.282,852	-2,0000	1,4341
5+128,698			8.273.282,1289	805.568,3436	1.282,051	172°15'07"	1.282,668	-2,0000	1,9994
5+140,000			8.273.278,8142	805.557,5910	1.281,765	153°28'53"	1.282,428	-2,0000	1,2633
5+159,395			8.273.265,8529	805.543,5072	1.281,492	121°16'19"	1.282,017	-2,0000	0,0000
5+159,396	PC4		8.273.265,8514	805.543,5064	1.281,492	121°16'09"	1.282,017	-2,0000	0,0001
5+160,000			8.273.265,3328	805.543,1976	1.281,493	120°16'00"	1.282,004	-2,0000	0,0570
5+176,585		PCV4	8.273.249,5826	805.538,5338	1.281,657	92°43'21"	1.281,653	-2,0000	1,6201
5+180,000			8.273.246,1694	805.538,5405	1.281,724	87°03'06"	1.281,594	-2,0000	1,9419
5+180,616			8.273.245,5542	805.538,5777	1.281,737	86°01'41"	1.281,587	-2,0000	2,0000
5+182,559			8.273.243,6207	805.538,7668	1.281,707	82°48'04"	1.281,570	-2,0000	2,0000
5+193,543			8.273.233,1237	805.541,8402	1.281,453	64°33'34"	1.281,645	-2,0000	2,0000
5+197,772			8.273.229,4255	805.543,8861	1.281,767	57°32'11"	1.281,752	-2,0000	2,0000
5+200,000			8.273.227,5859	805.545,1416	1.281,937	53°50'12"	1.281,827	-2,0000	2,0000
5+201,803		PCCV5	8.273.226,1584	805.546,2434	1.282,056	50°50'30"	1.281,896	-2,0000	2,0000
5+212,739		PTV5	8.273.218,9053	805.554,3668	1.282,140	32°40'48"	1.282,281	-2,0000	2,0000
5+216,770		V6	8.273.216,9319	805.557,8785	1.282,256	25°59'11"	1.282,402	-2,0000	2,0000





RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 5-RAMO 2



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
5		V0	8.273.223,1817	805.484,6287	1.279,989	350°27'03"	1.280,372	2,0000	-2,0000
5+20,000			8.273.224,8163	805.504,5378	1.280,364	0°09'43"	1.280,872	2,0000	-2,0000
5+28,688			8.273.224,4721	805.513,2170	1.280,716	4°22'49"	1.281,089	2,0000	-2,0000
5+32,617			8.273.224,1068	805.517,1288	1.280,831	6°17'17"	1.281,187	2,0000	-2,0000
5+40,000			8.273.223,0692	805.524,4373	1.281,198	9°52'23"	1.281,372	2,0000	-2,0000
5+41,102		PCV1	8.273.222,8752	805.525,5221	1.281,258	10°24'29"	1.281,400	2,0000	-2,0000
5+48,905			8.273.221,2129	805.533,1445	1.281,742	14°11'49"	1.281,602	2,0000	-2,0000
5+53,572			8.273.219,9791	805.537,6452	1.281,971	16°27'47"	1.281,731	2,0000	-2,0000
5+60,000			8.273.217,9905	805.543,7570	1.282,025	19°35'03"	1.281,917	2,0000	-2,0000
5+61,102		PTV1	8.273.217,6162	805.544,7935	1.282,034	20°07'09"	1.281,950	2,0000	-2,0000
5+73,185			8.273.212,8869	805.555,9067	1.282,322	25°59'10"	1.282,312	2,0000	-2,0000
5+80,000			8.273.209,7256	805.561,9431	1.282,516	29°17'43"	1.282,516	2,0000	-2,0000
5+96,360			8.273.200,7586	805.575,6111	1.282,987	37°14'21"	1.283,007	2,0000	-2,0000
5+98,454			8.273.199,4767	805.577,2669	1.283,038	38°15'21"	1.283,070	2,0000	-2,0000
5+100,000			8.273.198,5116	805.578,4746	1.283,075	39°00'23"	1.283,116	2,0000	-2,0000
5+103,085			8.273.196,5387	805.580,8462	1.283,150	40°30'16"	1.283,209	2,0000	-2,0000
5+106,004			8.273.194,6156	805.583,0420	1.283,222	41°55'18"	1.283,297	2,0000	-2,0000
5+120,000			8.273.184,6697	805.592,8775	1.283,572	48°43'03"	1.283,716	2,0000	-2,0000
5+136,117		V2	8.273.171,8709	805.602,6521	1.283,984	56°32'36"	1.284,200	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 5-RAMO 3



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
5	PI-0	V0	8.273.175,7301	805.608,4922	1.284,542	236°32'36"	1.284,200	2,0000	-2,0000
5+11,919	PC1		8.273.185,6743	805.601,9211	1.284,035	236°32'36"	1.283,842	2,0000	-2,0000
5+20,000			8.273.192,8985	805.598,3470	1.284,031	250°48'35"	1.283,600	2,0000	-2,0000
5+22,344		PCV1	8.273.195,1383	805.597,6570	1.283,982	254°56'54"	1.283,530	2,0000	-2,0000
5+28,245			8.273.200,9445	805.596,6497	1.283,863	265°21'58"	1.283,377	2,0000	-2,0000
5+30,750			8.273.203,4466	805.596,5438	1.283,820	269°47'19"	1.283,327	2,0000	-2,0000
5+34,905			8.273.207,5912	805.596,7941	1.283,760	277°07'26"	1.283,263	2,0000	-2,0000
5+38,257			8.273.210,8900	805.597,3807	1.283,724	283°02'30"	1.283,229	2,0000	-2,0000
5+40,000			8.273.212,5764	805.597,8194	1.283,709	286°07'07"	1.283,218	2,0000	-2,0000
5+52,617			8.273.223,7223	805.603,5614	1.283,697	308°23'37"	1.283,262	2,0000	-2,0000
5+60,000			8.273.229,2563	805.608,4428	1.283,710	314°26'11"	1.283,392	2,0000	-2,0000
5+61,662		PTV1	8.273.230,4293	805.609,6206	1.283,701	315°47'49"	1.283,431	2,0000	-2,0000
5+73,630			8.273.238,0012	805.618,8700	1.283,623	325°35'34"	1.283,731	2,0000	-2,0000
5+75,573			8.273.239,0768	805.620,4881	1.283,621	327°10'59"	1.283,779	2,0000	-2,0000
5+80,000			8.273.241,3566	805.624,2816	1.283,649	330°48'23"	1.283,890	2,0000	-2,0000
5+83,747			8.273.243,0960	805.627,6003	1.283,698	333°52'25"	1.283,984	2,0000	-2,0000
5+86,997			8.273.244,4589	805.630,5504	1.283,756	336°32'02"	1.284,065	2,0000	-2,0000
5+100,000			8.273.248,5024	805.642,8888	1.284,063	347°10'36"	1.284,390	2,0000	-2,0000
5+105,032			8.273.249,4421	805.647,8318	1.284,210	351°17'46"	1.284,516	2,0000	-2,0000
5+116,647		V2	8.273.251,1997	805.659,3126	1.284,548	351°17'46"	1.284,806	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 5-RAMO 4



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
5	PC1	V0	8.273.258,1196	805.658,2567	1.284,508	171°19'29"	1.284,806	2,0000	-2,0000
5+20,000			8.273.257,9491	805.638,3254	1.283,942	187°41'42"	1.284,306	2,0000	-2,0000
5+28,764		PCV1	8.273.259,6625	805.629,7364	1.284,018	194°52'07"	1.284,087	2,0000	-2,0000
5+32,032			8.273.260,5745	805.626,5985	1.283,864	197°32'36"	1.284,006	2,0000	-2,0000
5+40,000			8.273.263,4030	805.619,1541	1.283,616	204°03'55"	1.283,820	2,0000	-2,0000
5+41,359			8.273.263,9692	805.617,9186	1.283,603	205°10'40"	1.283,790	2,0000	-2,0000
5+45,626		PTV1	8.273.265,9011	805.614,1147	1.283,458	208°40'13"	1.283,697	2,0000	-2,0000
5+60,000			8.273.274,0392	805.602,2971	1.282,962	220°26'08"	1.283,392	0,3876	-0,3876
5+63,455		V2	8.273.276,3441	805.599,7237	1.282,870	223°15'49"	1.283,319	0,0000	0,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 5-RAMO 5



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
5		V0	8.273.268,1872	805.539,6600	1.281,345	121°16'09"	1.282,017	0,0000	0,0000
5+20,000			8.273.252,5294	805.527,2975	1.281,280	135°18'59"	1.281,584	1,8424	-1,8424
5+21,711		PCV1	8.273.251,3391	805.526,0684	1.281,269	136°31'05"	1.281,547	2,0000	-2,0000
5+23,819			8.273.249,9084	805.524,5203	1.281,253	137°59'56"	1.281,501	2,0000	-2,0000
5+37,769			8.273.241,5035	805.513,4079	1.281,248	147°47'49"	1.281,177	2,0000	-2,0000
5+40,000			8.273.240,3405	805.511,5041	1.281,225	149°21'50"	1.281,122	2,0000	-2,0000
5+41,565		PTV1	8.273.239,5560	805.510,1499	1.281,130	150°27'47"	1.281,083	2,0000	-2,0000
5+60,000			8.273.232,3496	805.493,2244	1.280,230	163°24'40"	1.280,623	2,0000	-2,0000
5+70,022		V2	8.273.230,0847	805.483,4674	1.279,987	170°27'03"	1.280,372	0,0000	0,0000

#### 4.1.6.4 – Relatórios Acesso Km 7





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
LOCAÇÃO  
ACESSO KM 7-RAMO 1



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
7		7000,000	8.273.525,1002	807.613,1975	1.320,787	351°54'25"
7+20,000		7020,000	8.273.522,9521	807.632,8729	1.322,333	20°33'17"
7+22,659		7022,659	8.273.521,9365	807.635,3298	1.322,377	24°21'48"
7+22,660	PCV1	7022,660	8.273.521,9361	807.635,3307	1.322,377	24°21'54"
7+29,566		7029,566	8.273.518,5594	807.641,3451	1.322,566	34°15'25"
7+32,877	PCCV2	7032,877	8.273.516,5846	807.644,0015	1.322,692	38°59'59"
7+40,000		7040,000	8.273.511,6340	807.649,1098	1.322,951	49°12'09"
7+43,093		7043,093	8.273.509,2168	807.651,0382	1.323,104	53°37'59"
7+43,094	PTV2	7043,094	8.273.509,2160	807.651,0388	1.323,104	53°38'04"
7+44,992		7044,992	8.273.507,6615	807.652,1276	1.323,197	56°21'11"
7+60,000		7060,000	8.273.493,9171	807.657,9329	1.323,611	77°51'02"
7+62,832	V3	7062,832	8.273.491,1299	807.658,4304	1.323,687	81°54'25"



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO

ACESSO KM 7-RAMO 2

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
7		7000,000	8.273.492,1154	807.665,3607	1.324,087	261°54'25"
7+17,447		7017,447	8.273.509,3734	807.666,6894	1.323,465	286°53'52"
7+19,739		7019,739	8.273.511,5461	807.667,4180	1.323,421	290°10'51"
7+20,000		7020,000	8.273.511,7908	807.667,5089	1.323,416	290°33'17"
7+23,764	PTV1	7023,764	8.273.515,2479	807.668,9942	1.323,359	295°56'47"
7+27,660	PCV2	7027,660	8.273.518,6627	807.670,8665	1.323,380	301°31'37"
7+35,632	PTV2	7035,632	8.273.524,9991	807.675,6825	1.323,418	312°56'45"
7+40,000		7040,000	8.273.528,0277	807.678,8269	1.323,574	319°12'09"
7+43,235		7043,235	8.273.530,0402	807.681,3586	1.323,688	323°50'11"
7+60,000		7060,000	8.273.536,8508	807.696,5438	1.324,214	347°51'02"
7+62,832	V3	7062,832	8.273.537,3484	807.699,3310	1.324,284	351°54'25"

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO

ACESSO KM 7-RAMO 3

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
7	PC1	7000,000	8.273.544,7308	807.669,5614	1.323,196	171°54'25"
7+20,000		7020,000	8.273.533,2591	807.654,1940	1.322,860	114°36'40"
7+20,362	V0	7020,362	8.273.532,9287	807.654,0462	1.322,866	113°34'26"
7+24,840		7024,840	8.273.528,6589	807.652,7278	1.322,973	100°44'44"
7+26,812	PCV1	7026,812	8.273.526,7065	807.652,4561	1.322,916	95°05'46"
7+28,986		7028,986	8.273.524,5349	807.652,3810	1.322,896	88°52'05"
7+40,000		7040,000	8.273.514,1297	807.655,5440	1.323,130	57°18'55"
7+41,285	V2	7041,285	8.273.513,0709	807.656,2723	1.323,146	53°37'59"

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO

ACESSO KM 7-RAMO 4

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Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
7		7000,000	8.273.513,7883	807.661,3170	1.323,186	290°10'50"
7+2,109	PCV1	7002,109	8.273.515,8025	807.661,9389	1.323,166	284°08'19"
7+12,226	PCCV2	7012,226	8.273.525,8118	807.661,8773	1.323,077	255°09'20"
7+14,333		7014,333	8.273.527,8163	807.661,2313	1.323,048	249°07'10"
7+17,345		7017,345	8.273.530,5392	807.659,9503	1.323,090	240°29'27"
7+20,000		7020,000	8.273.532,7563	807.658,4932	1.323,068	232°53'05"
7+20,923	V3	7020,923	8.273.533,4792	807.657,9195	1.323,020	230°14'26"
7+40,000		7040,000	8.273.540,6286	807.641,0065	1.322,399	175°35'20"
7+41,285	PI-2	7041,285	8.273.540,4887	807.639,7291	1.322,362	171°54'25"

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#### 4.1.6.4.2 – Curvas Horizontais



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
ACESSO KM 7-RAMO 1



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.525,1002	807.613,1975			
			81°54'25"	40,0000	
PI-1	8.273.530,7316	807.652,7992			90°00'00"
			171°54'25"	40,0000	
PI-2	8.273.491,1299	807.658,4304			

Ângulo Central:	90°00'00"
Raio:	40,0000

Tangente:	40,0000
Corda:	56,5686

Dist. Externa:	16,5686
Desenvolv.:	62,8319

Deflexão/Metro:	0,71619724
G. Curva/Metro:	1,43239449

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	7	8.273.525,1002	807.613,1975
Centro		8.273.485,4986	807.618,8288
PI-2	7+62,832	8.273.491,1299	807.658,4305



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
ACESSO KM 7-RAMO 2



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.492,1154	807.665,3607			
			351°54'25"	40,0000	
PI-1	8.273.531,7170	807.659,7294			90°00'00"
			81°54'25"	40,0000	
PI-2	8.273.537,3484	807.699,3310			

Ângulo Central:	90°00'00"
Raio:	40,0000

Tangente:	40,0000
Corda:	56,5685

Dist. Externa:	16,5685
Desenvolv.:	62,8318

Deflexão/Metro:	0,71619724
G. Curva/Metro:	1,43239449

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	7	8.273.492,1154	807.665,3607
Centro		8.273.497,7467	807.704,9623
PI-2	7+62,832	8.273.537,3484	807.699,3310



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
ACESSO KM 7-RAMO 3



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.544,7308	807.669,5614			
			261°54'25"	33,4664	
PI-1	8.273.540,0193	807.636,4283			118°16'25"
			143°37'59"	33,4664	
PI-2	8.273.513,0709	807.656,2723			

Ângulo Central:	118°16'25"
Raio:	20,0000

Tangente:	33,4664
Corda:	34,3358

Dist. Externa:	18,9872
Desenvolv.:	41,2853

Deflexão/Metro:	1,43239449
G. Curva/Metro:	2,86478898

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	7	8.273.544,7308	807.669,5614
Centro		8.273.524,9300	807.672,3771
PI-2	7+41,285	8.273.513,0709	807.656,2723



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
ACESSO KM 7-RAMO 4



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.273.513,7883	807.661,3170			
			20°10'50"	33,4664	
PI-1	8.273.545,2002	807.672,8622			118°16'25"
			261°54'25"	33,4664	
PI-2	8.273.540,4887	807.639,7291			

Ângulo Central:	118°16'25"
Raio:	20,0000

Tangente:	33,4664
Corda:	34,3358

Dist. Externa:	18,9872
Desenvolv.:	41,2853

Deflexão/Metro:	1,43239449
G. Curva/Metro:	2,86478898

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	7	8.273.513,7883	807.661,3170
Centro		8.273.520,6879	807.642,5448
PI-2	7+41,285	8.273.540,4887	807.639,7291

#### 4.1.6.4.3 – Curvas Verticais





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
ACESSO KM 7-RAMO 1



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	7	1.322,305			
			2,09997	27,7680	
PI-1	7+27,768	1.322,888			0,9824
			3,08241	10,2170	
PI-2	7+37,985	1.323,203			

Parábola Simples

Comprimento:	10,2170	Raio Vertical:	1.039,9612	Constante	-0,0004807872	Dist. Externa:	-0,0125
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	7+22,660	1.322,781
PCCV2	7+32,877	1.323,046

Curva Vertical: 3 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	7+27,768	1.322,888			
			3,08241	10,2170	
PI-2	7+37,985	1.323,203			1,0824
			2,00004	24,8470	
PI-3	7+62,832	1.323,700			

Parábola Simples

Comprimento:	10,2170	Raio Vertical:	-943,9458	Constante	0,0005296914	Dist. Externa:	0,0138
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV2	7+32,877	1.323,046
PTV2	7+43,094	1.323,305



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
ACESSO KM 7-RAMO 2-R01



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	7	1.323,700			
			-2,00000	11,8820	
PI-1	7+11,882	1.323,462			2,0745
			0,07453	19,7640	
PI-2	7+31,646	1.323,477			

Parábola Simples

Comprimento:	23,7640	Raio Vertical:	1.145,5128	Constante	-0,0004364857	Dist. Externa:	-0,0616
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Pontos Notáveis

Ponto	Estaca	Cota
1	7	1.323,700
PTV1	7+23,764	1.323,471

Curva Vertical: 3 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	7+11,882	1.323,462			
			0,07453	19,7640	
PI-2	7+31,646	1.323,477			2,0255
			2,10001	31,1860	
PI-3	7+62,832	1.324,132			

Parábola Simples

Comprimento:	7,9720	Raio Vertical:	393,5851	Constante	-0,0012703734	Dist. Externa:	-0,0202
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Pontos Notáveis

Ponto	Estaca	Cota
PCV2	7+27,660	1.323,474
PTV2	7+35,632	1.323,561



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
ACESSO KM 7-RAMO 3



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	7+20,362	1.323,218			
			-2,00007	13,6860	
PI-1	7+34,048	1.322,944			4,7599
			2,75985	7,2370	
PI-2	7+41,285	1.323,144			

Parábola Simples

Comprimento:	14,4730	Raio Vertical:	304,0598	Constante	-0,0016444132	Dist. Externa:	-0,0861
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	7+26,812	1.323,089
V2	7+41,285	1.323,144



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
ACESSO KM 7-RAMO 4



Curva Vertical: 2 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	7	1.323,331			
			-0,29999	7,1670	
PI-1	7+7,167	1.323,310			0,7256
			-1,02562	9,4070	
PI-2	7+16,574	1.323,213			

Parábola Simples

Comprimento:	10,1170	Raio Vertical:	-1.394,2306	Constante	0,0003586207	Dist. Externa:	0,0092
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	7+2,109	1.323,325
PCCV2	7+12,226	1.323,258

Curva Vertical: 3 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	7+7,167	1.323,310			
			-1,02562	9,4070	
PI-2	7+16,574	1.323,213			3,0256
			2,00000	4,3490	
PI-3	7+20,923	1.323,300			

Parábola Simples

Comprimento:	8,6970	Raio Vertical:	287,4783	Constante	-0,0017392615	Dist. Externa:	-0,0329
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV2	7+12,226	1.323,258
V3	7+20,923	1.323,300

#### 4.1.6.4.4 – Greide + Superelevação



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

ACESSO KM 7-RAMO 1



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
7		V0	8.273.525,1002	807.613,1975	1.320,787	351°54'25"	1.322,305	2,0000	-2,0000
7+20,000			8.273.522,9521	807.632,8729	1.322,333	20°33'17"	1.322,725	0,2347	-0,2347
7+22,659			8.273.521,9365	807.635,3298	1.322,377	24°21'48"	1.322,781	0,0000	0,0000
7+22,660		PCV1	8.273.521,9361	807.635,3307	1.322,377	24°21'54"	1.322,781	0,0000	0,0000
7+29,566			8.273.518,5594	807.641,3451	1.322,566	34°15'25"	1.322,949	0,0000	0,0000
7+32,877		PCCV2	8.273.516,5846	807.644,0015	1.322,692	38°59'59"	1.323,046	0,7343	-0,7343
7+40,000			8.273.511,6340	807.649,1098	1.322,951	49°12'09"	1.323,238	2,3140	-2,3140
7+43,093			8.273.509,2168	807.651,0382	1.323,104	53°37'59"	1.323,305	3,0000	-3,0000
7+43,094		PTV2	8.273.509,2160	807.651,0388	1.323,104	53°38'04"	1.323,305	3,0000	-3,0000
7+44,992			8.273.507,6615	807.652,1276	1.323,197	56°21'11"	1.323,343	3,0000	-3,0000
7+60,000			8.273.493,9171	807.657,9329	1.323,611	77°51'02"	1.323,643	2,1587	-2,1587
7+62,832		V3	8.273.491,1299	807.658,4304	1.323,687	81°54'25"	1.323,700	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

ACESSO KM 7-RAMO 2-R01



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
7		1	8.273.492,1154	807.665,3607	1.324,087	261°54'25"	1.323,700	2,0000	-2,0000
7+17,447			8.273.509,3734	807.666,6894	1.323,465	286°53'52"	1.323,484	3,0000	-3,0000
7+19,739			8.273.511,5461	807.667,4180	1.323,421	290°10'51"	1.323,475	3,0000	-3,0000
7+20,000			8.273.511,7908	807.667,5089	1.323,416	290°33'17"	1.323,475	2,9507	-2,9507
7+23,764		PTV1	8.273.515,2479	807.668,9942	1.323,359	295°56'47"	1.323,471	2,2402	-2,2402
7+27,660		PCV2	8.273.518,6627	807.670,8665	1.323,380	301°31'37"	1.323,474	1,5048	-1,5048
7+35,632		PTV2	8.273.524,9991	807.675,6825	1.323,418	312°56'45"	1.323,561	0,0000	0,0000
7+40,000			8.273.528,0277	807.678,8269	1.323,574	319°12'09"	1.323,653	0,0000	0,0000
7+43,235			8.273.530,0402	807.681,3586	1.323,688	323°50'11"	1.323,720	0,0000	0,0000
7+60,000			8.273.536,8508	807.696,5438	1.324,214	347°51'02"	1.324,073	1,7110	-1,7110
7+62,832		V3	8.273.537,3484	807.699,3310	1.324,284	351°54'25"	1.324,132	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

ACESSO KM 7-RAMO 3



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
7	PC1		8.273.544,7308	807.669,5614	1.323,196	171°54'25"			
7+20,000			8.273.533,2591	807.654,1940	1.322,860	114°36'40"			
7+20,362		V0	8.273.532,9287	807.654,0462	1.322,866	113°34'26"	1.323,218	0,0000	0,0000
7+24,840			8.273.528,6589	807.652,7278	1.322,973	100°44'44"	1.323,128	2,0000	-2,0000
7+26,812		PCV1	8.273.526,7065	807.652,4561	1.322,916	95°05'46"	1.323,089	2,0000	-2,0000
7+28,986			8.273.524,5349	807.652,3810	1.322,896	88°52'05"	1.323,053	2,0000	-2,0000
7+40,000			8.273.514,1297	807.655,5440	1.323,130	57°18'55"	1.323,111	0,0000	0,0000
7+41,285		V2	8.273.513,0709	807.656,2723	1.323,146	53°37'59"	1.323,144	0,0000	0,0000





RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

ACESSO KM 7-RAMO 4



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
7		V0	8.273.513,7883	807.661,3170	1.323,186	290°10'50"	1.323,331	0,0000	0,0000
7+2,109		PCV1	8.273.515,8025	807.661,9389	1.323,166	284°08'19"	1.323,325	0,0000	0,0000
7+12,226		PCCV2	8.273.525,8118	807.661,8773	1.323,077	255°09'20"	1.323,258	0,0000	0,0000
7+14,333			8.273.527,8163	807.661,2313	1.323,048	249°07'10"	1.323,244	-3,0000	3,0000
7+17,345			8.273.530,5392	807.659,9503	1.323,090	240°29'27"	1.323,251	-3,0000	3,0000
7+20,000			8.273.532,7563	807.658,4932	1.323,068	232°53'05"	1.323,283	0,0000	0,0000
7+20,923		V3	8.273.533,4792	807.657,9195	1.323,020	230°14'26"	1.323,300	0,0000	0,0000
7+40,000			8.273.540,6286	807.641,0065	1.322,399	175°35'20"			
7+41,285	PI-2		8.273.540,4887	807.639,7291	1.322,362	171°54'25"			

#### **4.1.6.5 – Relatórios Dispositivo Km 16 (Entronc. DF-2 20/DF-001)**

#### 4.1.6.5.1 – Locação



RODOVIA: DF-220



TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DISP KM 16-RAMO 1

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
16		16000,000	8.270.829,0210	814.500,2520	1.277,451	102°21'33"
16+20,000		16020,000	8.270.809,1434	814.499,6113	1.277,232	81°19'59"
16+26,966	PTV1	16026,966	8.270.802,3426	814.501,0977	1.276,998	74°00'35"
16+29,627		16029,627	8.270.799,8035	814.501,8928	1.276,934	71°12'44"
16+40,000		16040,000	8.270.790,3593	814.506,1452	1.277,271	60°18'26"
16+40,992	PCV2	16040,992	8.270.789,5021	814.506,6444	1.277,303	59°15'51"
16+49,672		16049,672	8.270.782,4254	814.511,6547	1.277,443	50°08'20"
16+60,000		16060,000	8.270.775,1703	814.518,9836	1.277,365	39°16'52"
16+73,503		16073,503	8.270.767,9966	814.530,3826	1.277,100	25°05'08"
16+80,000		16080,000	8.270.765,5989	814.536,4169	1.277,097	18°15'19"
16+81,195	PCCV3	16081,195	8.270.765,2370	814.537,5557	1.277,098	16°59'56"
16+100,000		16100,000	8.270.762,9197	814.556,1235	1.277,305	357°13'45"
16+116,607	PCCV4	16116,607	8.270.766,2177	814.572,3339	1.277,432	339°46'15"
16+120,000		16120,000	8.270.767,4894	814.575,4794	1.277,457	336°12'12"
16+136,607	PCCV5	16136,607	8.270.776,3840	814.589,4271	1.277,570	318°44'41"
16+140,000		16140,000	8.270.778,6996	814.591,9069	1.277,575	315°10'38"
16+158,321		16158,321	8.270.793,5358	814.602,5079	1.277,374	295°55'01"
16+160,000		16160,000	8.270.795,0574	814.603,2185	1.277,344	294°09'05"
16+162,536		16162,536	8.270.797,3944	814.604,2018	1.277,301	291°29'08"
16+180,000		16180,000	8.270.814,3846	814.607,9080	1.277,599	273°07'31"
16+181,029		16181,029	8.270.815,4121	814.607,9544	1.277,606	272°02'38"
16+190,636	PTV5	16190,636	8.270.824,9935	814.607,4512	1.277,788	261°56'39"
16+200,000		16200,000	8.270.834,1075	814.605,3507	1.277,734	252°05'58"
16+220,000		16220,000	8.270.851,5996	814.595,8874	1.277,231	231°04'24"
16+222,199		16222,199	8.270.853,2817	814.594,4718	1.277,209	228°45'43"
16+227,357	PCV6	16227,357	8.270.856,9939	814.590,8934	1.277,263	223°20'22"
16+240,000		16240,000	8.270.864,5318	814.580,7781	1.277,278	210°02'51"
16+251,931	PC3	16251,931	8.270.869,3324	814.569,8811	1.276,924	197°30'14"
16+251,932	PCCV7	16251,932	8.270.869,3327	814.569,8802	1.276,924	197°30'11"
16+260,000		16260,000	8.270.871,1818	814.562,0348	1.276,898	189°01'17"
16+280,000		16280,000	8.270.870,6641	814.542,1536	1.276,805	167°59'44"
16+280,815	PCCV8	16280,815	8.270.870,4886	814.541,3574	1.276,815	167°08'18"
16+283,680		16283,680	8.270.869,7777	814.538,5823	1.276,843	164°07'35"
16+300,000		16300,000	8.270.863,0477	814.523,7818	1.276,828	146°58'10"
16+303,522		16303,522	8.270.861,0337	814.520,8929	1.276,820	143°15'59"
16+314,699		16314,699	8.270.853,4802	814.512,6811	1.276,644	131°30'58"
16+316,127	PTV8	16316,127	8.270.852,3987	814.511,7487	1.276,714	130°00'53"
16+319,490	PCV9	16319,490	8.270.849,7580	814.509,6671	1.276,825	126°28'46"
16+320,000		16320,000	8.270.849,3468	814.509,3660	1.276,842	125°56'37"
16+340,000		16340,000	8.270.831,3858	814.500,8258	1.277,496	104°55'03"
16+342,434	V10	16342,434	8.270.829,0210	814.500,2520	1.277,451	102°21'33"



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DISP KM 16-RAMO 2



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
16		16000,000	8.270.932,8114	814.470,5557	1.276,069	49°59'42"
16+20,000		16020,000	8.270.916,4935	814.482,0797	1.276,230	59°32'39"
16+35,788		16035,788	8.270.902,3975	814.489,1652	1.276,451	67°04'57"
16+40,000		16040,000	8.270.898,4900	814.490,7369	1.276,464	69°05'36"
16+40,345		16040,345	8.270.898,1675	814.490,8596	1.276,465	69°15'30"
16+59,317		16059,317	8.270.879,9690	814.496,1511	1.276,359	78°19'00"
16+60,000		16060,000	8.270.879,2997	814.496,2875	1.276,356	78°38'34"
16+80,000	PCV1	16080,000	8.270.859,4546	814.498,5775	1.276,692	88°11'31"
16+81,565		16081,565	8.270.857,8901	814.498,6167	1.276,739	88°56'21"
16+86,549		16086,549	8.270.852,9064	814.498,6055	1.276,877	91°19'08"
16+100,000		16100,000	8.270.839,5045	814.497,5436	1.277,407	97°44'29"
16+109,671		16109,671	8.270.829,9845	814.495,8564	1.277,888	102°21'32"
16+120,000	PTV1	16120,000	8.270.820,0024	814.493,2144	1.277,671	107°17'26"
16+136,970		16136,970	8.270.804,2092	814.487,0436	1.277,363	115°23'36"
16+139,769		16139,769	8.270.801,6949	814.485,8139	1.277,386	116°43'47"
16+140,000		16140,000	8.270.801,4887	814.485,7098	1.277,388	116°50'24"
16+160,000		16160,000	8.270.784,4765	814.475,2379	1.277,070	126°23'21"
16+160,500		16160,500	8.270.784,0746	814.474,9404	1.277,079	126°37'41"
16+180,000		16180,000	8.270.769,4373	814.462,0888	1.277,341	135°56'19"
16+182,406		16182,406	8.270.767,7816	814.460,3432	1.277,323	137°05'14"
16+186,695	PCV2	16186,695	8.270.764,9180	814.457,1505	1.277,274	139°08'07"
16+200,000		16200,000	8.270.756,7879	814.446,6270	1.277,100	145°29'16"
16+220,000		16220,000	8.270.746,8789	814.429,2810	1.277,034	155°02'14"
16+220,545	V3	16220,545	8.270.746,6500	814.428,7865	1.277,032	155°17'50"



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

LOCAÇÃO

DISP KM 16-RAMO 3



Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
16	PC1	16000,000	8.270.740,2906	814.431,7118	1.276,942	335°17'50"
16+20,000		16020,000	8.270.747,4145	814.450,3842	1.276,965	342°56'12"
16+33,876		16033,876	8.270.750,8672	814.463,8186	1.277,000	348°14'13"
16+38,210		16038,210	8.270.751,6893	814.468,0738	1.277,104	349°53'33"
16+40,000		16040,000	8.270.751,9930	814.469,8379	1.277,154	350°34'34"
16+57,685		16057,685	8.270.753,8547	814.487,4143	1.277,323	357°19'53"
16+60,000		16060,000	8.270.753,9446	814.489,7275	1.277,364	358°12'56"
16+78,504	PC2	16078,504	8.270.753,3800	814.508,2107	1.277,102	5°17'00"
16+80,000		16080,000	8.270.753,2497	814.509,7015	1.276,605	4°42'43"
16+98,114		16098,114	8.270.752,8540	814.527,7997	1.277,028	357°47'35"
16+100,000		16100,000	8.270.752,9385	814.529,6842	1.277,053	357°04'21"
16+107,117		16107,117	8.270.753,4704	814.536,7802	1.277,137	354°21'15"
16+120,000		16120,000	8.270.755,2866	814.549,5310	1.277,235	349°25'59"
16+140,000		16140,000	8.270.760,2522	814.568,8895	1.277,384	341°47'37"
16+145,296		16145,296	8.270.761,9952	814.573,8897	1.277,425	339°46'15"
16+160,000		16160,000	8.270.767,7472	814.587,4160	1.277,493	334°09'15"
16+180,000		16180,000	8.270.777,6386	814.604,7817	1.277,523	326°30'53"
16+190,822		16190,822	8.270.783,9294	814.613,5841	1.277,260	322°22'52"
16+195,895		16195,895	8.270.787,0934	814.617,5492	1.277,141	320°26'36"
16+200,000		16200,000	8.270.789,7508	814.620,6783	1.277,042	318°52'31"
16+217,137		16217,137	8.270.801,7336	814.632,9158	1.275,840	312°19'46"
16+220,000		16220,000	8.270.803,8688	814.634,8237	1.275,625	311°14'09"
16+229,170		16229,170	8.270.810,9453	814.640,6539	1.275,128	307°43'59"
16+240,000		16240,000	8.270.819,3495	814.647,4826	1.274,830	310°27'25"
16+260,000		16260,000	8.270.833,9785	814.661,1111	1.277,436	315°29'15"
16+280,000		16280,000	8.270.847,3561	814.675,9698	1.277,559	320°31'05"
16+287,181		16287,181	8.270.851,8340	814.681,5835	1.277,592	322°19'27"
16+292,776		16292,776	8.270.855,1989	814.686,0534	1.277,437	323°43'54"
16+300,000		16300,000	8.270.859,3793	814.691,9444	1.277,498	325°32'55"
16+320,000		16320,000	8.270.869,9554	814.708,9117	1.277,544	330°34'44"
16+336,356	PI-4	16336,356	8.270.877,4717	814.723,4345	1.277,542	334°41'35"



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9



LOCAÇÃO  
DISP KM 16-RAMO 4

Km	Descrição	Progressiva	Norte	Este	Cota	Azimute
16		16000,000	8.270.883,7999	814.720,4422	1.277,700	154°41'35"
16+20,000		16020,000	8.270.876,1459	814.701,9734	1.277,686	160°17'09"
16+40,000		16040,000	8.270.870,3283	814.682,8465	1.277,614	165°52'44"
16+43,290	PTV1	16043,290	8.270.869,5513	814.679,6496	1.277,595	166°47'56"
16+48,844		16048,844	8.270.868,3563	814.674,2258	1.277,559	168°21'07"
16+60,000		16060,000	8.270.866,4024	814.663,2437	1.277,664	171°28'18"
16+67,406		16067,406	8.270.865,4367	814.655,9013	1.277,732	173°32'34"
16+80,000		16080,000	8.270.864,4058	814.643,3516	1.277,563	177°03'52"
16+100,000	PCV2	16100,000	8.270.864,3573	814.623,3596	1.277,294	182°39'27"
16+120,000		16120,000	8.270.866,2574	814.603,4580	1.277,208	188°15'01"
16+122,443		16122,443	8.270.866,6224	814.601,0424	1.277,253	188°56'01"
16+127,948		16127,948	8.270.867,5502	814.595,6164	1.277,370	190°28'23"
16+140,000	PTV2	16140,000	8.270.870,0881	814.583,8364	1.277,485	193°50'36"
16+153,091		16153,091	8.270.873,6241	814.571,2343	1.276,985	197°30'15"
16+160,000		16160,000	8.270.875,8128	814.564,6815	1.276,848	199°26'10"
16+180,000		16180,000	8.270.883,3772	814.546,1757	1.276,510	205°01'44"
16+182,822		16182,822	8.270.884,5887	814.543,6270	1.276,516	205°49'05"
16+185,926		16185,926	8.270.885,9616	814.540,8432	1.276,520	206°41'10"
16+200,000		16200,000	8.270.892,7091	814.528,4953	1.276,500	210°37'19"
16+206,938		16206,938	8.270.896,3435	814.522,5858	1.276,479	212°33'43"
16+220,000		16220,000	8.270.903,7196	814.511,8085	1.276,394	216°12'53"
16+227,955		16227,955	8.270.908,5430	814.505,4832	1.276,369	218°26'22"
16+232,656		16232,656	8.270.911,5075	814.501,8349	1.276,363	219°45'14"
16+240,000		16240,000	8.270.916,3041	814.496,2742	1.276,308	221°48'28"
16+260,000		16260,000	8.270.930,3426	814.482,0403	1.276,124	227°24'02"
16+269,277	V3	16269,277	8.270.937,3114	814.475,9176	1.276,033	229°59'42"

#### 4.1.6.5.2 – Curvas Horizontais





RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 16-RAMO 1



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.270.829,0210	814.500,2520			
			192°21'33"	99,5224	
PI-1	8.270.731,8050	814.478,9505			122°35'18"
			69°46'14"	259,0067	
PI-2	8.270.821,3640	814.721,9807			

Ângulo Central:	122°35'18"
Raio:	54,5000

Tangente:	99,5223
Corda:	95,6036

Dist. Externa:	58,9678
Desenvolv.:	116,6066

Deflexão/Metro:	0,52564935
G. Curva/Metro:	1,05129871

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	16	8.270.829,0210	814.500,2520
Centro		8.270.817,3559	814.553,4890
PC2	16+116,607	8.270.766,2177	814.572,3339

Curva Horizontal: PI-2 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-1	8.270.731,8050	814.478,9505			
			69°46'14"	259,0067	
PI-2	8.270.821,3640	814.721,9807			142°16'00"
			287°30'14"	219,1119	
PI-3	8.270.887,2667	814.513,0145			

Ângulo Central:	142°16'00"
Raio:	54,5000

Tangente:	159,4843
Corda:	103,1438

Dist. Externa:	114,0393
Desenvolv.:	135,3247

Deflexão/Metro:	0,52564935
G. Curva/Metro:	1,05129871

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC2	16+116,607	8.270.766,2177	814.572,3339
Centro		8.270.817,3560	814.553,4890
PC3	16+251,931	8.270.869,3324	814.569,8811



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 16-RAMO 1



Curva Horizontal: PI-3 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-2	8.270.821,3640	814.721,9807			
			287°30'14"	219,1119	
PI-3	8.270.887,2667	814.513,0145			95°08'42"
			192°21'33"	59,6275	
PI-4	8.270.829,0210	814.500,2520			

Ângulo Central:	95°08'42"
Raio:	54,5000

Tangente:	59,6275
Corda:	80,4563

Dist. Externa:	26,2818
Desenvolv.:	90,5023

Deflexão/Metro:	0,52564935
G. Curva/Metro:	1,05129871

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC3	16+251,931	8.270.869,3324	814.569,8811
Centro		8.270.817,3560	814.553,4890
PI-4	16+342,434	8.270.829,0210	814.500,2520



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 16-RAMO 2



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.270.932,8114	814.470,5557			
			139°59'42"	157,2446	
PI-1	8.270.812,3641	814.571,6413			105°18'09"
			245°17'50"	157,2446	
PI-2	8.270.746,6500	814.428,7865			

Ângulo Central:	105°18'09"
Raio:	120,0000

Tangente:	157,2446
Corda:	190,7897

Dist. Externa:	77,8026
Desenvolv.:	220,5449

Deflexão/Metro:	0,23873241
G. Curva/Metro:	0,47746483

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	16	8.270.932,8114	814.470,5557
Centro		8.270.855,6687	814.378,6373
PI-2	16+220,545	8.270.746,6500	814.428,7865



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 16-RAMO 3



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.270.740,2906	814.431,7118			
			65°17'50"	40,1730	
PI-1	8.270.757,0793	814.468,2085			29°59'10"
			95°17'00"	122,5517	
PI-2	8.270.745,7944	814.590,2395			

Ângulo Central:	29°59'10"	Tangente:	40,1730	Dist. Externa:	5,2864	Deflexão/Metro:	0,19098593
Raio:	150,0000	Corda:	77,6107	Desenvolv.:	78,5036	G. Curva/Metro:	0,38197186

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	16	8.270.740,2906	814.431,7118
Centro		8.270.604,0173	814.494,3983
PC2	16+78,504	8.270.753,3800	814.508,2107

Curva Horizontal: PI-2 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-1	8.270.757,0793	814.468,2085			
			95°17'00"	122,5517	
PI-2	8.270.745,7944	814.590,2395			57°33'02"
			37°43'59"	136,9829	
PI-3	8.270.854,1301	814.674,0707			

Ângulo Central:	57°33'02"	Tangente:	82,3787	Dist. Externa:	21,1323	Deflexão/Metro:	0,19098593
Raio:	150,0000	Corda:	144,4124	Desenvolv.:	150,6667	G. Curva/Metro:	0,38197186

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC2	16+78,504	8.270.753,3800	814.508,2107
Centro		8.270.902,7427	814.522,0232
PC3	16+229,170	8.270.810,9453	814.640,6539



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 16-RAMO 3



Curva Horizontal: PI-3 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-2	8.270.745,7944	814.590,2395			
			37°43'59"	136,9829	
PI-3	8.270.854,1301	814.674,0707			26°57'36"
			64°41'35"	54,6042	
PI-4	8.270.877,4717	814.723,4345			

Ângulo Central:	26°57'36"
Raio:	227,7930

Tangente:	54,6041
Corda:	106,1996

Dist. Externa:	6,4531
Desenvolv.:	107,1857

Deflexão/Metro:	0,12576282
G. Curva/Metro:	0,25152564

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC3	16+229,170	8.270.810,9453	814.640,6539
Centro		8.270.671,5399	814.820,8088
PI-4	16+336,356	8.270.877,4717	814.723,4344



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS HORIZONTAIS  
DISP KM 16-RAMO 4



Curva Horizontal: PI-1 - Circular Simples (Raio)

Vértice	Norte	Este	Azimute	Distância	Deflexão
PI-0	8.270.883,7999	814.720,4422			
			244°41'35"	158,0754	
PI-1	8.270.816,2277	814.577,5373			75°18'07"
			319°59'42"	158,0753	
PI-2	8.270.937,3114	814.475,9176			

Ângulo Central:	75°18'07"
Raio:	204,8880

Tangente:	158,0754
Corda:	250,3114

Dist. Externa:	53,8917
Desenvolv.:	269,2773

Deflexão/Metro:	0,13982219
G. Curva/Metro:	0,27964439

Pontos Notáveis

Ponto	Estaca	Norte	Este
PC1	16	8.270.883,7999	814.720,4422
Centro		8.271.069,0249	814.632,8591
PI-2	16+269,277	8.270.937,3114	814.475,9176

#### 4.1.6.5.3 – Curvas Verticais



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 1



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Curva Vertical: 2 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	16	1.277,857			
			-0,21998	13,4830	
PI-1	16+13,483	1.277,827			0,5096
			-0,72955	47,6100	
PI-2	16+61,093	1.277,480			

Parábola Simples

Comprimento:	26,9660	Raio Vertical:	-5.291,6968	Constante	0,0000944877	Dist. Externa:	0,0172
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	16	1.277,857
PTV1	16+26,966	1.277,729

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Curva Vertical: 3 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	16+13,483	1.277,827			
			-0,72955	47,6100	
PI-2	16+61,093	1.277,480			2,5942
			1,86468	37,8080	
PI-3	16+98,901	1.278,185			

Parábola Simples

Comprimento:	40,2030	Raio Vertical:	1.549,7040	Constante	-0,0003226423	Dist. Externa:	-0,1304
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Pontos Notáveis

Ponto	Estaca	Cota
PCV2	16+40,992	1.277,627
PCCV3	16+81,195	1.277,855

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 1



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Curva Vertical: 4 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-2	16+61,093	1.277,480			
			1,86468	37,8080	
PI-3	16+98,901	1.278,185			0,6339
			1,23078	27,7060	
PI-4	16+126,607	1.278,526			

Parábola Simples

Comprimento:	35,4120	Raio Vertical:	-5.586,3314	Constante	0,0000895042	Dist. Externa:	0,0281
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV3	16+81,195	1.277,855
PCCV4	16+116,607	1.278,403

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Curva Vertical: 5 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-3	16+98,901	1.278,185			
			1,23078	27,7060	
PI-4	16+126,607	1.278,526			0,7310
			0,49980	37,0150	
PI-5	16+163,622	1.278,711			

Parábola Simples

Comprimento:	20,0000	Raio Vertical:	-2.736,0419	Constante	0,0001827457	Dist. Externa:	0,0183
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV4	16+116,607	1.278,403
PCCV5	16+136,607	1.278,576

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 1



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Curva Vertical: 6 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-4	16+126,607	1.278,526			
			0,49980	37,0150	
PI-5	16+163,622	1.278,711			0,9997
			-0,49991	76,0220	
PI-6	16+239,644	1.278,331			

Parábola Simples

Comprimento:	54,0290	Raio Vertical:	-5.404,3927	Constante	0,0000925173	Dist. Externa:	0,0675
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV5	16+136,607	1.278,576
PTV5	16+190,636	1.278,576

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Curva Vertical: 7 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-5	16+163,622	1.278,711			
			-0,49991	76,0220	
PI-6	16+239,644	1.278,331			0,8101
			-1,30996	26,7290	
PI-7	16+266,373	1.277,981			

Parábola Simples

Comprimento:	24,5750	Raio Vertical:	-3.033,7445	Constante	0,0001648128	Dist. Externa:	0,0249
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Pontos Notáveis

Ponto	Estaca	Cota
PCV6	16+227,357	1.278,392
PCCV7	16+251,932	1.278,170

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 1



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Curva Vertical: 8 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-6	16+239,644	1.278,331			
			-1,30996	26,7290	
PI-7	16+266,373	1.277,981			0,4200
			-1,72994	32,0970	
PI-8	16+298,470	1.277,426			

Parábola Simples

Comprimento:	28,8830	Raio Vertical:	-6.877,4598	Constante	0,0000727013	Dist. Externa:	0,0152
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV7	16+251,932	1.278,170
PCCV8	16+280,815	1.277,731

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Curva Vertical: 9 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-7	16+266,373	1.277,981			
			-1,72994	32,0970	
PI-8	16+298,470	1.277,426			3,1355
			1,40552	32,4920	
PI-9	16+330,962	1.277,882			

Parábola Simples

Comprimento:	35,3120	Raio Vertical:	1.126,2467	Constante	-0,0004439525	Dist. Externa:	-0,1384
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Pontos Notáveis

Ponto	Estaca	Cota
PCCV8	16+280,815	1.277,731
PTV8	16+316,127	1.277,674

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 1



Curva Vertical: 10 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-8	16+298,470	1.277,426			
			1,40552	32,4920	
PI-9	16+330,962	1.277,882			1,6255
			-0,22001	11,4720	
PI-10	16+342,434	1.277,857			

Parábola Simples

Comprimento:	22,9440	Raio Vertical:	-1.411,4788	Constante	0,0003542384	Dist. Externa:	0,0466
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Pontos Notáveis

Ponto	Estaca	Cota
PCV9	16+319,490	1.277,721
V10	16+342,434	1.277,857



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 2



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Curva Vertical: 2 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	16	1.276,558			
			1,31001	100,0000	
PI-1	16+100,000	1.277,868			2,0660
			-0,75601	103,6200	
PI-2	16+203,620	1.277,085			

Parábola Simples

Comprimento:	40,0000	Raio Vertical:	-1.936,0875	Constante	0,0002582528	Dist. Externa:	0,1033
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	16+80,000	1.277,606
PTV1	16+120,000	1.277,717

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Curva Vertical: 3 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	16+100,000	1.277,868			
			-0,75601	103,6200	
PI-2	16+203,620	1.277,085			0,2560
			-0,50003	16,9250	
PI-3	16+220,545	1.277,000			

Parábola Simples

Comprimento:	33,8500	Raio Vertical:	13.223,5442	Constante	-0,0000378113	Dist. Externa:	-0,0108
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Pontos Notáveis

Ponto	Estaca	Cota
PCV2	16+186,695	1.277,213
V3	16+220,545	1.277,000

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 3



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Curva Vertical: 2 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	16	1.277,000			
			0,50000	40,0000	
PI-1	16+40	1.277,200			0,7286
			1,22857	140,0000	
PI-2	16+180,000	1.278,920			

Parábola Simples

Comprimento:	40,0000	Raio Vertical:	5.490,1961	Constante	-0,0000910714	Dist. Externa:	-0,0364
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Pontos Notáveis

Ponto	Estaca	Cota
PCV1	16+20,000	1.277,100
PTV1	16+60,000	1.277,446

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Curva Vertical: 3 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	16+40	1.277,200			
			1,22857	140,0000	
PI-2	16+180,000	1.278,920			2,2286
			-1,00000	100,0000	
PI-3	16+280	1.277,920			

Parábola Simples

Comprimento:	40,0000	Raio Vertical:	-1.794,8718	Constante	0,0002785714	Dist. Externa:	0,1114
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Pontos Notáveis

Ponto	Estaca	Cota
PCV2	16+160,000	1.278,674
PTV2	16+200,000	1.278,720

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RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 3



Curva Vertical: 4 - Parábola (Comprimento)

Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-2	16+180,000	1.278,920			
			-1,00000	100,0000	
PI-3	16+280	1.277,920			0,4996
			-0,50039	56,3560	
PI-4	16+336,356	1.277,638			

Parábola Simples

Comprimento:	40,0000	Raio Vertical:	8.006,2509	Constante	-0,0000624512	Dist. Externa:	-0,0250
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Pontos Notáveis

Ponto	Estaca	Cota
PCV3	16+260,000	1.278,120
PTV3	16+300,000	1.277,820



RODOVIA: DF-220  
TRECHO: Km 0 ao Km 15,9  
CURVAS VERTICAIS  
DISP KM 16-RAMO 4



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Curva Vertical: 2 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-0	16	1.277,638			
			0,49998	21,6450	
PI-1	16+21,645	1.277,746			0,2802
			0,78014	98,3550	
PI-2	16+120,000	1.278,514			

Parábola Simples

Comprimento:	43,2900	Raio Vertical:	15.451,1715	Constante	-0,0000323600	Dist. Externa:	-0,0152
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Pontos Notáveis

Ponto	Estaca	Cota
1	16	1.277,638
PTV1	16+43,290	1.277,915

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Curva Vertical: 3 - Parábola (Comprimento)

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Vértice	Estaca	Cota	Rampa (%)	Distância	K (%)
PI-1	16+21,645	1.277,746			
			0,78014	98,3550	
PI-2	16+120,000	1.278,514			2,0901
			-1,31000	149,2770	
PI-3	16+269,277	1.276,558			

Parábola Simples

Comprimento:	40,0000	Raio Vertical:	-1.913,7435	Constante	0,0002612680	Dist. Externa:	0,1045
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Pontos Notáveis

Ponto	Estaca	Cota
PCV2	16+100,000	1.278,358
PTV2	16+140,000	1.278,252

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#### 4.1.6.5.4 – Greide + Superelevação



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 16-RAMO 1



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
16		PCV1	8.270.829,0210	814.500,2520	1.277,451	102°21'33"	1.277,857	-2,0000	2,0000
16+20,000			8.270.809,1434	814.499,6113	1.277,232	81°19'59"	1.277,775	-2,0000	2,0000
16+26,966		PTV1	8.270.802,3426	814.501,0977	1.276,998	74°00'35"	1.277,729	-2,0000	2,0000
16+29,627			8.270.799,8035	814.501,8928	1.276,934	71°12'44"	1.277,710	-2,0000	2,0000
16+40,000			8.270.790,3593	814.506,1452	1.277,271	60°18'26"	1.277,634	-2,0000	2,0000
16+40,992		PCV2	8.270.789,5021	814.506,6444	1.277,303	59°15'51"	1.277,627	-2,0000	2,0000
16+49,672			8.270.782,4254	814.511,6547	1.277,443	50°08'20"	1.277,588	-2,0000	2,0000
16+60,000			8.270.775,1703	814.518,9836	1.277,365	39°16'52"	1.277,605	-2,0000	2,0000
16+73,503			8.270.767,9966	814.530,3826	1.277,100	25°05'08"	1.277,730	-2,0000	2,0000
16+80,000			8.270.765,5989	814.536,4169	1.277,097	18°15'19"	1.277,833	-2,0000	2,0000
16+81,195		PCCV3	8.270.765,2370	814.537,5557	1.277,098	16°59'56"	1.277,855	-2,0000	2,0000
16+100,000			8.270.762,9197	814.556,1235	1.277,305	357°13'45"	1.278,174	-2,0000	2,0000
16+116,607		PCCV4	8.270.766,2177	814.572,3339	1.277,432	339°46'15"	1.278,403	-2,0000	2,0000
16+120,000			8.270.767,4894	814.575,4794	1.277,457	336°12'12"	1.278,443	-2,0000	2,0000
16+136,607		PCCV5	8.270.776,3840	814.589,4271	1.277,570	318°44'41"	1.278,576	-2,0000	2,0000
16+140,000			8.270.778,6996	814.591,9069	1.277,575	315°10'38"	1.278,592	-2,0000	2,0000
16+158,321			8.270.793,5358	814.602,5079	1.277,374	295°55'01"	1.278,641	-2,0000	2,0000
16+160,000			8.270.795,0574	814.603,2185	1.277,344	294°09'05"	1.278,642	-2,0000	2,0000
16+162,536			8.270.797,3944	814.604,2018	1.277,301	291°29'08"	1.278,643	-2,0000	2,0000
16+180,000			8.270.814,3846	814.607,9080	1.277,599	273°07'31"	1.278,619	-2,0000	2,0000
16+181,029			8.270.815,4121	814.607,9544	1.277,606	272°02'38"	1.278,615	-2,0000	2,0000
16+190,636		PTV5	8.270.824,9935	814.607,4512	1.277,788	261°56'39"	1.278,576	-2,0000	2,0000
16+200,000			8.270.834,1075	814.605,3507	1.277,734	252°05'58"	1.278,529	-2,0000	2,0000
16+220,000			8.270.851,5996	814.595,8874	1.277,231	231°04'24"	1.278,429	-2,0000	2,0000
16+222,199			8.270.853,2817	814.594,4718	1.277,209	228°45'43"	1.278,418	-2,0000	2,0000
16+227,357		PCV6	8.270.856,9939	814.590,8934	1.277,263	223°20'22"	1.278,392	-2,0000	2,0000
16+240,000			8.270.864,5318	814.580,7781	1.277,278	210°02'51"	1.278,303	-2,0000	2,0000
16+251,931	PC3		8.270.869,3324	814.569,8811	1.276,924	197°30'14"	1.278,170	-2,0000	2,0000
16+251,932		PCCV7	8.270.869,3327	814.569,8802	1.276,924	197°30'11"	1.278,170	-2,0000	2,0000
16+260,000			8.270.871,1818	814.562,0348	1.276,898	189°01'17"	1.278,060	-2,0000	2,0000
16+280,000			8.270.870,6641	814.542,1536	1.276,805	167°59'44"	1.277,745	-2,0000	2,0000
16+280,815		PCCV8	8.270.870,4886	814.541,3574	1.276,815	167°08'18"	1.277,731	-2,0000	2,0000
16+283,680			8.270.869,7777	814.538,5823	1.276,843	164°07'35"	1.277,685	-2,0000	2,0000
16+300,000			8.270.863,0477	814.523,7818	1.276,828	146°58'10"	1.277,563	-2,0000	2,0000
16+303,522			8.270.861,0337	814.520,8929	1.276,820	143°15'59"	1.277,567	-2,0000	2,0000
16+314,699			8.270.853,4802	814.512,6811	1.276,644	131°30'58"	1.277,655	-2,0000	2,0000
16+316,127		PTV8	8.270.852,3987	814.511,7487	1.276,714	130°00'53"	1.277,674	-2,0000	2,0000
16+319,490		PCV9	8.270.849,7580	814.509,6671	1.276,825	126°28'46"	1.277,721	-2,0000	2,0000
16+320,000			8.270.849,3468	814.509,3660	1.276,842	125°56'37"	1.277,728	-2,0000	2,0000
16+340,000			8.270.831,3858	814.500,8258	1.277,496	104°55'03"	1.277,860	-2,0000	2,0000
16+342,434		V10	8.270.829,0210	814.500,2520	1.277,451	102°21'33"	1.277,857	-2,0000	2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 16-RAMO 2



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
16		V0	8.270.932,8114	814.470,5557	1.276,069	49°59'42"	1.276,558	2,0000	-2,0000
16+20,000			8.270.916,4935	814.482,0797	1.276,230	59°32'39"	1.276,820	2,0000	-2,0000
16+35,788			8.270.902,3975	814.489,1652	1.276,451	67°04'57"	1.277,027	2,0000	-2,0000
16+40,000			8.270.898,4900	814.490,7369	1.276,464	69°05'36"	1.277,082	2,0000	-2,0000
16+40,345			8.270.898,1675	814.490,8596	1.276,465	69°15'30"	1.277,087	2,0000	-2,0000
16+59,317			8.270.879,9690	814.496,1511	1.276,359	78°19'00"	1.277,335	2,0000	-2,0000
16+60,000			8.270.879,2997	814.496,2875	1.276,356	78°38'34"	1.277,344	2,0000	-2,0000
16+80,000		PCV1	8.270.859,4546	814.498,5775	1.276,692	88°11'31"	1.277,606	2,0000	-2,0000
16+81,565			8.270.857,8901	814.498,6167	1.276,739	88°56'21"	1.277,626	2,0000	-2,0000
16+86,549			8.270.852,9064	814.498,6055	1.276,877	91°19'08"	1.277,681	2,0000	-2,0000
16+100,000			8.270.839,5045	814.497,5436	1.277,407	97°44'29"	1.277,765	2,0000	-2,0000
16+109,671			8.270.829,9845	814.495,8564	1.277,888	102°21'32"	1.277,767	2,0000	-2,0000
16+120,000		PTV1	8.270.820,0024	814.493,2144	1.277,671	107°17'26"	1.277,717	2,0000	-2,0000
16+136,970			8.270.804,2092	814.487,0436	1.277,363	115°23'36"	1.277,589	2,0000	-2,0000
16+139,769			8.270.801,6949	814.485,8139	1.277,386	116°43'47"	1.277,567	2,0000	-2,0000
16+140,000			8.270.801,4887	814.485,7098	1.277,388	116°50'24"	1.277,566	2,0000	-2,0000
16+160,000			8.270.784,4765	814.475,2379	1.277,070	126°23'21"	1.277,414	2,0000	-2,0000
16+160,500			8.270.784,0746	814.474,9404	1.277,079	126°37'41"	1.277,411	2,0000	-2,0000
16+180,000			8.270.769,4373	814.462,0888	1.277,341	135°56'19"	1.277,263	2,0000	-2,0000
16+182,406			8.270.767,7816	814.460,3432	1.277,323	137°05'14"	1.277,245	2,0000	-2,0000
16+186,695		PCV2	8.270.764,9180	814.457,1505	1.277,274	139°08'07"	1.277,213	2,0000	-2,0000
16+200,000			8.270.756,7879	814.446,6270	1.277,100	145°29'16"	1.277,119	2,0000	-2,0000
16+220,000			8.270.746,8789	814.429,2810	1.277,034	155°02'14"	1.277,003	2,0000	-2,0000
16+220,545		V3	8.270.746,6500	814.428,7865	1.277,032	155°17'50"	1.277,000	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 16-RAMO 3



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
16	PC1	V0	8.270.740,2906	814.431,7118	1.276,942	335°17'50"	1.277,000	2,0000	-2,0000
16+20,000		PCV1	8.270.747,4145	814.450,3842	1.276,965	342°56'12"	1.277,100	2,0000	-2,0000
16+33,876			8.270.750,8672	814.463,8186	1.277,000	348°14'13"	1.277,187	2,0000	-2,0000
16+38,210			8.270.751,6893	814.468,0738	1.277,104	349°53'33"	1.277,221	2,0000	-2,0000
16+40,000			8.270.751,9930	814.469,8379	1.277,154	350°34'34"	1.277,236	2,0000	-2,0000
16+57,685			8.270.753,8547	814.487,4143	1.277,323	357°19'53"	1.277,418	2,0000	-2,0000
16+60,000		PTV1	8.270.753,9446	814.489,7275	1.277,364	358°12'56"	1.277,446	1,7776	-1,7776
16+78,504	PC2		8.270.753,3800	814.508,2107	1.277,102	5°17'00"	1.277,673	0,0000	0,0000
16+80,000			8.270.753,2497	814.509,7015	1.276,605	4°42'43"	1.277,691	-0,1046	0,1046
16+98,114			8.270.752,8540	814.527,7997	1.277,028	357°47'35"	1.277,914	-1,3707	1,3707
16+100,000			8.270.752,9385	814.529,6842	1.277,053	357°04'21"	1.277,937	-1,5025	1,5025
16+107,117			8.270.753,4704	814.536,7802	1.277,137	354°21'15"	1.278,025	-2,0000	2,0000
16+120,000			8.270.755,2866	814.549,5310	1.277,235	349°25'59"	1.278,183	-2,0000	2,0000
16+140,000			8.270.760,2522	814.568,8895	1.277,384	341°47'37"	1.278,429	-2,0000	2,0000
16+145,296			8.270.761,9952	814.573,8897	1.277,425	339°46'15"	1.278,494	-2,0000	2,0000
16+160,000		PCV2	8.270.767,7472	814.587,4160	1.277,493	334°09'15"	1.278,674	-2,0000	2,0000
16+180,000			8.270.777,6386	814.604,7817	1.277,523	326°30'53"	1.278,809	-2,0000	2,0000
16+190,822			8.270.783,9294	814.613,5841	1.277,260	322°22'52"	1.278,788	-2,0000	2,0000
16+195,895			8.270.787,0934	814.617,5492	1.277,141	320°26'36"	1.278,756	-1,7354	1,7354
16+200,000		PTV2	8.270.789,7508	814.620,6783	1.277,042	318°52'31"	1.278,720	-1,5213	1,5213
16+217,137			8.270.801,7336	814.632,9158	1.275,840	312°19'46"	1.278,549	-0,6276	0,6276
16+220,000			8.270.803,8688	814.634,8237	1.275,625	311°14'09"	1.278,520	-0,4783	0,4783
16+229,170			8.270.810,9453	814.640,6539	1.275,128	307°43'59"	1.278,428	0,0000	0,0000
16+240,000			8.270.819,3495	814.647,4826	1.274,830	310°27'25"	1.278,320	0,7026	-0,7026
16+260,000		PCV3	8.270.833,9785	814.661,1111	1.277,436	315°29'15"	1.278,120	2,0000	-2,0000
16+280,000			8.270.847,3561	814.675,9698	1.277,559	320°31'05"	1.277,945	2,0000	-2,0000
16+287,181			8.270.851,8340	814.681,5835	1.277,592	322°19'27"	1.277,894	2,0000	-2,0000
16+292,776			8.270.855,1989	814.686,0534	1.277,437	323°43'54"	1.277,859	2,0000	-2,0000
16+300,000		PTV3	8.270.859,3793	814.691,9444	1.277,498	325°32'55"	1.277,820	2,0000	-2,0000
16+320,000			8.270.869,9554	814.708,9117	1.277,544	330°34'44"	1.277,720	2,0000	-2,0000
16+336,356	PI-4	V4	8.270.877,4717	814.723,4345	1.277,542	334°41'35"	1.277,638	2,0000	-2,0000



RODOVIA: DF-220

TRECHO: Km 0 ao Km 15,9

GREIDE + SUPERELEVAÇÃO

DISP KM 16-RAMO 4



Estaca	PNH	PNV	Norte	Este	Cota	Az. Seção	Grade	Super-Elevação	
								Esq.	Dir.
16		1	8.270.883,7999	814.720,4422	1.277,700	154°41'35"	1.277,638	2,0000	-2,0000
16+20,000			8.270.876,1459	814.701,9734	1.277,686	160°17'09"	1.277,751	2,0000	-2,0000
16+40,000			8.270.870,3283	814.682,8465	1.277,614	165°52'44"	1.277,890	2,0000	-2,0000
16+43,290		PTV1	8.270.869,5513	814.679,6496	1.277,595	166°47'56"	1.277,915	2,0000	-2,0000
16+48,844			8.270.868,3563	814.674,2258	1.277,559	168°21'07"	1.277,958	2,0000	-2,0000
16+60,000			8.270.866,4024	814.663,2437	1.277,664	171°28'18"	1.278,045	2,0000	-2,0000
16+67,406			8.270.865,4367	814.655,9013	1.277,732	173°32'34"	1.278,103	2,0000	-2,0000
16+80,000			8.270.864,4058	814.643,3516	1.277,563	177°03'52"	1.278,201	2,0000	-2,0000
16+100,000		PCV2	8.270.864,3573	814.623,3596	1.277,294	182°39'27"	1.278,358	2,0000	-2,0000
16+120,000			8.270.866,2574	814.603,4580	1.277,208	188°15'01"	1.278,409	2,0000	-2,0000
16+122,443			8.270.866,6224	814.601,0424	1.277,253	188°56'01"	1.278,401	2,0000	-2,0000
16+127,948			8.270.867,5502	814.595,6164	1.277,370	190°28'23"	1.278,371	2,0000	-2,0000
16+140,000		PTV2	8.270.870,0881	814.583,8364	1.277,485	193°50'36"	1.278,252	2,0000	-2,0000
16+153,091			8.270.873,6241	814.571,2343	1.276,985	197°30'15"	1.278,080	2,0000	-2,0000
16+160,000			8.270.875,8128	814.564,6815	1.276,848	199°26'10"	1.277,990	2,0000	-2,0000
16+180,000			8.270.883,3772	814.546,1757	1.276,510	205°01'44"	1.277,728	2,0000	-2,0000
16+182,822			8.270.884,5887	814.543,6270	1.276,516	205°49'05"	1.277,691	2,0000	-2,0000
16+185,926			8.270.885,9616	814.540,8432	1.276,520	206°41'10"	1.277,650	2,0000	-2,0000
16+200,000			8.270.892,7091	814.528,4953	1.276,500	210°37'19"	1.277,466	2,0000	-2,0000
16+206,938			8.270.896,3435	814.522,5858	1.276,479	212°33'43"	1.277,375	2,0000	-2,0000
16+220,000			8.270.903,7196	814.511,8085	1.276,394	216°12'53"	1.277,204	2,0000	-2,0000
16+227,955			8.270.908,5430	814.505,4832	1.276,369	218°26'22"	1.277,099	2,0000	-2,0000
16+232,656			8.270.911,5075	814.501,8349	1.276,363	219°45'14"	1.277,038	2,0000	-2,0000
16+240,000			8.270.916,3041	814.496,2742	1.276,308	221°48'28"	1.276,942	2,0000	-2,0000
16+260,000			8.270.930,3426	814.482,0403	1.276,124	227°24'02"	1.276,680	2,0000	-2,0000
16+269,277		V3	8.270.937,3114	814.475,9176	1.276,033	229°59'42"	1.276,558	2,0000	-2,0000

## 4.2 – Projeto de Terraplenagem

#### **4.2.1 – Introdução**

O projeto de terraplenagem promove o melhor movimento de terra, com compensação plena entre material escavado e aterros.

Este projeto foi fundamentado na geometria do corpo estradal, determinado pelo projeto geométrico e nas características físicas e morfológicas da região, embasados nos resultados dos estudos geotécnicos.

#### **4.2.2 – Conclusão da verificação dos estudos geotécnicos existentes e do atual estudo geotécnico**

Estes estudos têm como objetivo a definição, a classificação e a distribuição das massas a serem movimentadas em terraplenagem.

Os resultados dos furos de sondagens a trado investigativas estão dispostos no *Volume 3A - Estudos Geotécnicos*, assim como demonstrados em perfil geotécnico no mesmo volume com as respectivas classificações HRB e ISC.

Estes estudos, conciliados com o greide proposto, mostram um trecho já consolidado em aterros existentes, um subleito de características mecânicas razoáveis, onde o projeto de terraplenagem não propõe a substituição de material, por não encontrar  $CBR < 10$ . Não há presença de solos moles em toda a extensão do trecho, bem como lençol freático inexistente até as profundidades sondadas.

#### **4.2.3 – Notas de Serviço**

As notas de serviço do pavimento acabado foram obtidas através de software específico, onde apresentam todos os dados necessários para a locação dos off-sets, greide, enfim todos os elementos da plataforma imposta no projeto e estão apresentadas no Volume 3B.

#### **4.2.4 – Calculo de Volumes**

No Volume 3B, também serão apresentadas as planilhas de calculo de volumes de terraplenagem, obtidos por software específico.

## 4.3 – Projeto de Drenagem



#### 4.3.1 – Introdução

O projeto de Drenagem constitui-se do dimensionamento e verificação das obras que têm por finalidade captar as águas superficiais ou subterrâneas que chegam à rodovia, dando destino adequado às mesmas, ou seja, promovendo o seu escoamento para fora do corpo estradal.

Dessa maneira, dividiram-se os dispositivos de drenagem nos seguintes grupos e funções:

- Obras de drenagem superficial (dispositivos em: grama, concreto, pedras arrumadas, entre outros)
- Obras de arte correntes – Bueiros
- Obras de drenagem profunda – Drenos longitudinais e colchões drenantes

Para elaboração deste projeto foram utilizados os resultados dos Estudos Hidrológicos e Geotécnicos, bem como os dados do Projeto Geométrico e do cadastro das obras existentes.

#### 4.3.2 – Drenagem Superficial

O projeto de drenagem superficial trata do posicionamento e detalhamento dos dispositivos que tem como função coletar as águas precipitadas sobre a plataforma e taludes, encaminhando-as a locais de escoamento natural do terreno.

Os dispositivos indicados no projeto encontram-se padronizados, conforme solicitação do DER-DF, no caderno de projetos padrão de drenagem do DNIT. Para os casos atípicos foram elaborados projetos, apresentados no *Volume 2 – Projeto de Execução*.

Desta forma, adotou-se os dispositivos indicados a seguir:

- Bueiros de greide;
- Sarjetas de concreto de seção triangular para cortes;
- Sarjetas de concreto para drenagem de pistas em aterros;
- Dispositivos em grama (quando a velocidade das águas permitia);
- Meio-Fios;
- Saídas e descidas d'água de concreto para aterros;
- Saídas d'água de concreto para cortes;
- Caixas coletoras;
- Valetas de proteção para aterros e cortes;
- Canaletas de grama e concreto com dissipadores de energia hidráulica;
- Dissipadores de energia de jusante;

Para a determinação da seção tipo dos dispositivos de drenagem superficial procurou-se os que dispunham de dimensões que proporcionassem escoamentos suficientes das descargas determinadas no projeto hidráulico, e com comprimento de utilização que não exigisse a implantação de muitas obras.

O projeto de drenagem superficial está apresentado em desenhos escalas 1:1000, com indicações de inclinação, tipo, locação em planta dentro do *Volume 2 – Projeto*.

### 4.3.3 – Drenagem de Talvegue

Baseado nos resultados dos Estudos Hidrológicos que apontaram a vazão máxima provável decorrente de precipitações pluviais nas bacias hidrográficas interceptadas pela rodovia, analisaram-se as condições de funcionamento das obras correspondentes.

Em alguns casos as obras trabalharão com carga hidráulica. Nestes, foram indicados dispositivos de proteção junto às bocas, ocorrendo também em outras obras que se fizeram necessárias, juntamente com dissipadores de energia a jusante e bacias de amortecimento quando necessárias.

A obtenção dos serviços necessários nas obras de arte correntes, deu-se pela análise do cadastro das obras e seções transversais levantados segundo o eixo das mesmas, gerando notas de serviço desenhadas em escalas 1:200, contendo todos os detalhes para a execução dos serviços, como esconsidade, cota de jusante, cota de montante, localização de dissipadores de energia, bocas, entre outros necessários para perfeito funcionamento da OAC.

As estruturas hidráulicas foram dimensionadas em condições de escoamento crítico onde ocorre o equilíbrio entre a energia cinética e potencial, e do funcionamento dos mesmos como canal.

Apresenta-se a seguir quadro resumo das obras e das soluções adotadas:

QUADRO RESUMO - VAZÕES DE PROJETO				
Bacia	Km	Obra Existente	Obra Proposta	Observações
01E	0+084	BSTC Ø 1,00	-	MANTER
02E	1+348	BSTC Ø 0,60	BSTC Ø 1,00	SUBSTITUIR
01D	6+299	BSTC Ø 0,60	BSTC Ø 0,80	SUBSTITUIR
02D	7+537	BSTC Ø 0,60	BDTC Ø 1,00	SUBSTITUIR
03E	9+237	BSTC Ø 0,80	BSTC Ø 0,80	REFORÇO
04E	10+137	BSTC Ø 0,80	BDTC Ø 0,80	REFORÇO
05E	12+530	BDTC Ø 0,80	BSTC Ø 0,80	REFORÇO
06E	15+064	BDTC Ø 0,80	-	MANTER

### 4.3.4 – Drenagem Profunda

Foram previstos dispositivos de drenagem profunda longitudinal em cortes de materiais de 2ª categoria, ou onde o greide projetado tenha altura inferior a 1,50 metro do provável contato com materiais impermeáveis ou do nível d'água.

Os locais dos dispositivos constam do volume 2 – Projeto de Execução e os detalhes construtivos, fazem parte do caderno de padronização dos dispositivos de drenagem do DNIT.

### 4.3.5 – Apresentação do projeto

No *Volume 2 – Projeto de execução*, encontram todos os desenhos compostos de locação, cotas, detalhes em geral, tanto da drenagem superficial, como em perfis longitudinais de bueiros.



A seguir são listadas as Especificações de Serviços para a execução das obras constantes do caderno de “Especificações Gerais para Obras Rodoviárias” do DNIT, antigo DNER, edição revista em 1997, aplicáveis ao presente projeto.

Apresenta-se também, as Especificações Complementares, para os itens de serviço não contemplados no referido caderno de especificações.

#### **a) Terraplenagem**

- DNER-ES 278/97 – Desmatamento, Destocamento e Limpeza;
- DNER-ES 280/97 – Escavação, Carga e Transporte de Material;
- DNER-ES 282/97 – Compactação de Aterros.

#### **b) Pavimentação**

- DNER-ES 299/97 - Regularização do Subleito;
- DNER-ES 301/97 - Sub-base;
- DNER-ES 303/97 - Base Estabilizada Granulometricamente;
- DNER-ES 306/97 – Imprimação;
- DNER-ES 318/97 – Concreto Betuminoso Usinado à Quente (CBUQ)
- DNER-ES 309/97 - Tratamento Superficial Duplo.

#### **c) Drenagem e Obras-de-Arte Correntes**

- DNER-ES 283/97 – Dissipadores;
- DNER-ES 284/97 – Bueiros Tubulares de Concreto;
- DNER-ES 286/97 - Bueiro Celular;
- DNER-ES 287/97 - Caixas Coletoras/Caixas de Passagem;
- DNER-ES 288/97 - Sarjetas e Valetas;
- DNER-ES 290/97 - Meios-fios;
- DNER-ES 291/97 - Entradas e Descidas D’água;
- DNER-ES 292/97 – Drenos Longitudinais Profundos.

#### **d) Sinalização**

- DNER-ES 339/97 - Sinalização Horizontal;
- DNER-ES 340/97 - Sinalização Vertical;
- EC-S-01 – Tachas e Tachões.

#### **e) Obras Complementares**

- DNER-ES 338/97 - Cercas;
- DNER-ES 370/97 – Defensas;
- EC-OC-01 – Abrigo de Passageiros

#### **f) Meio Ambiente**

- DNER-ES 341/97 – Proteção Vegetal;
- EC-MA-01 – Plantio de Árvores e Arbustos.

## TACHAS E TACHÕES

### EC-S-01

#### 1 - GENERALIDADES

As tachas e tachões tem por finalidade principal, fornecer orientação ótica complementar necessária ao trânsito noturno e em especial em locais sujeitos a condições desfavoráveis de visibilidade quer por neblina ou chuvas, em função de suas propriedades refletivas sob a luz dos faróis dos veículos, além de diurnamente alertar quando da transposição para a faixa de rolamento adjacente.

As tachas deverão apresentar elemento refletivo de boa qualidade constituído de acrílico, prismático, retrorefletividade aproximada = 190 milicandelas, tratamento especial contra abrasão e refletor totalmente embutido no corpo da tacha.

O corpo deverá apresentar forma geométrica de tronco de pirâmide com dimensões aproximadas de 0,100 m x 0,100 m, a altura deverá ser de 0,019 m e o pino de fixação em aço 1/2", de concreto resinado com as seguintes características:

- flexão : 108 kgf/cm<sup>2</sup>
- compressão : 505 kg/cm<sup>2</sup>
- abrasão : 0,3% de desgaste (teste máquina Dupont)

Os tachões deverão apresentar elemento refletivo de boa qualidade, constituído de acrílico prismático, retrorefletividade de aproximada = 190 milicandelas, tratamento especial contra abrasão e refletor totalmente embutido no corpo do tachão.

O corpo deverá apresentar forma geométrica de tronco de pirâmide nas dimensões de 0,250 m x 0,160 m, a altura deverá ser de 0,050 m e o pino de fixação em aço 1/2", com as seguintes características:

- flexão : 110 kgf/cm<sup>2</sup>
- compressão : 518 kg/cm<sup>2</sup>
- abrasão : 0,3% de desgaste (teste máquina Dupont)

#### 2 - MATERIAIS

As tachas e tachões serão constituídas por corpo, composto de material organo-inorgânico, à base de resinas sintéticas e fillerizantes minerais, com alta resistência a impactos, na cor prevista no projeto em função de seu posicionamento e finalidade, podendo ser branco ou amarelo com elementos refletor na cor branca ou amarela, e pino de fixação.

O dispositivo poderá ser mono ou bidirecional, sendo o refletor dotado de áreas de reflexão maior que 20,0 cm<sup>2</sup> e atender aos seguintes valores mínimos de Coeficiente de Intensidade Luminosa (CIL).

Ângulo de Entrada	V = 0° H = 15° E e D	V = 0° H = 10° E e D	V = 0° H = 10° E e D	H = 10° E e D
Ângulo de Observação	2°	1°	0,5°	0,3°
R (m cd/lux)	5	20	60	100

Fonte: CIE/1982: Publication, retroreflection, definition and measurement.

#### Fatores mínimos de Correção de Reflexão

Cor	Branca	Amarela	Vermelha
Fator de multiplicação	1,0	0,5	0,2

A cola a ser utilizada deverá ser de alta resistência.

### 3 - EQUIPAMENTOS

Todo equipamento será previamente inspecionado pela Fiscalização, devendo dela receber aprovação, sem o que não será dada a autorização para o início dos serviços.

Para a fixação das tachas e tachões serão empregados os seguintes equipamentos:

- compressor de ar;
- furadeira profissional de impacto;
- ferramentas manuais;
- conjunto de brocas de vídea;
- vassoura;
- lixa.

Além desses, poderão ser usados outros equipamentos aprovados pela Fiscalização.

### 4 - EXECUÇÃO

Durante a implantação das tachas e tachões, a executante deverá providenciar inicialmente a sinalização da obra, tal que o usuário da rodovia e o tráfego de obra possam se deslocar com segurança.

A implantação não deverá ser executada em dias chuvosos ou com o pavimento molhado.

Deverá ser efetuada uma pré-demarcação antes da fixação da tacha ao pavimento a fim de se obter perfeito alinhamento e posicionamento das peças, os quais deverão obedecer ao projeto original. Para que se consiga uma boa aderência dos dispositivos ao pavimento, torna-se necessário que se efetue uma adequada limpeza no pavimento, eliminando do mesmo, poeira, torrões de argila, agregados soltos, manchas de óleo ou graxa, etc.

### 5 –MEDIÇÃO

Os serviços de implantação de tachas e tachões serão medidos por unidade efetivamente implantada, incluindo aquisição, transporte, mão-de-obra e encargo social necessários a perfeita execução dos serviços.