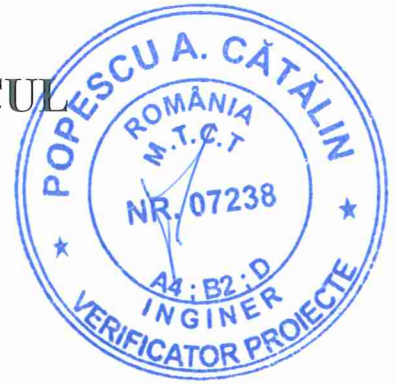
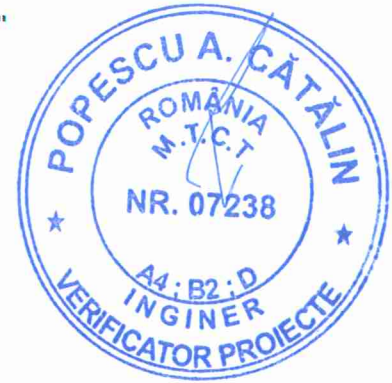


III. BREVIAR DE CALCUL



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"Modernizare drumuri in comuna Caseiu"
Structura rutiera noua



1. Stabilirea traficului de calcul:

$N_c = 0.3$ mos milioane osii standard

2. Stabilirea capacitatii portante:

-tip pamant : P3 - Nisip argilos vartos, nisip argilos consistent

-tip climatic : II

-regim hidrologic : 2B pentru sectoarele de drum situate:

- in rambleu cu inaltimea sub 1 m
- la nivelul terenului
- in profil mixt
- debleu

3. Alegerea alcatuirii sistemului rutier:

Pamant - P3 - Nisip argilos vartos, nisip argilos consistent	$E_p = 65\text{MPa}$	$\mu_p = 0.30$
BA16 rul 50/70	$h_{ba16} = 4\text{cm}$	$E_{ba16} = 3600\text{MPa}$ $\mu_{ba16} = 0.35$
BAD22.4 leg 50/70	$h_{bad22.4} = 6\text{cm}$	$E_{bad22.4} = 3000\text{MPa}$ $\mu_{bad22.4} = 0.35$
Strat piatra sparta impanata	$h_{ps} = 20\text{cm}$	$E_{ps} = 400\text{MPa}$ $\mu_{ps} = 0.27$
Strat balast	$h_{balast} = 350$	$\mu_{balast} = 0.27$
Strat de forma din balast nisipos	$h_{stratforma} = 15\text{cm}$	$E_{echivalent} = 83\text{MPa}$
	$E_b = 0.2 \cdot h_{balast}^{0.45} \cdot E_{echivalent} = 231.707 \cdot \text{MPa}$	
	$h_{balast} = 35\text{cm}$	

DRUM: CASEIU

Sector omogen: DA

Parametrii problemei sunt

Sarcina..... 57.50 kN
Presiunea pneului 0.625 MPa
Raza cercului 17.11 cm
Stratul 1: Modulul 3231. MPa, Coeficientul Poisson .350, Grosimea 10.00 cm
Stratul 2: Modulul 400. MPa, Coeficientul Poisson .270, Grosimea 20.00 cm
Stratul 3: Modulul 232. MPa, Coeficientul Poisson .270, Grosimea 35.00 cm
Stratul 4: Modulul 83. MPa, Coeficientul Poisson .300 si e semifinit

REZULTATE: EFORT DEFORMATIE DEFORMATIE

R	Z	RADIAL	RADIALA	VERTICALA
cm	cm	MPa	microdef	microdef
.0	-10.00	.876E+00	.215E+03	-.301E+03
.0	10.00	-.154E-01	.215E+03	-.881E+03
.0	.00	-.170E+01	-.273E+03	.174E+03
.0	-65.00	.323E-01	.134E+03	-.194E+03
.0	65.00	.411E-02	.134E+03	-.360E+03

Rata de degradare sub trafic

$$RDO_{adm} := 0.9$$

$$RDO := \frac{N_c}{N_{adm}}$$

$$\epsilon_r := 215$$

$$N_{adm} := 24.5 \cdot 10^8 \cdot \epsilon_r^{-3.97} = 1.347$$

$$RDO := \frac{N_c}{N_{adm}} = 0.223 \quad \text{Verifica}$$

Criteriul deformatii verticale

$$\epsilon_{zadm} := 600 \cdot N_c^{-0.28} = 840.538$$

$$\epsilon_z := 360$$

Verifica

Verificare inghet-dezghet

$$k := \frac{H_e}{z_{cr}}$$

$$H_e := h_{ba16} \cdot 0.5 + h_{bad22.4} \cdot 0.6 + h_{ps} \cdot 0.75 + h_{balast} \cdot 0.8 + h_{stratfoma} \cdot 0.9 = 62.1 \cdot \text{cm}$$

$$H_{sr} := h_{ba16} + h_{bad22.4} + h_{ps} + h_{balast} + h_{stratfoma} = 80 \cdot \text{cm}$$

$$\Delta_z := H_{sr} - H_e = 17.9 \cdot \text{cm}$$

Comuna Caseiu, judetul Cluj

$$I_{med5.30} := 560$$

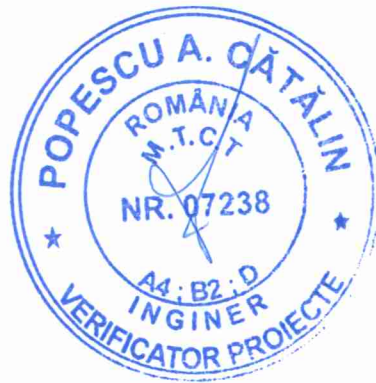
Curba 3

$$z := 100 \cdot \text{cm}$$

$$z_{cr} := z + \Delta_z = 117.9 \cdot \text{cm}$$

$$k := \frac{H_e}{z_{cr}} = 0.527$$

$k > 0.45$ Verifica



Intocmit:
Ing. Grivase Catalin





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"Modernizare drumuri in comuna Caseiu"
Structura rutiera noua

1. Stabilirea traficului de calcul:

$N_c = 0.3$ mos milioane osii standard

2. Stabilirea capacitatii portante:

-tip pamant : P5 - Argila nisipoasa vartoasa

-tip climatic : II

-regim hidrologic : **2B** pentru sectoarele de drum situate:

-in rambleu cu inaltimea sub 1 m

-la nivelul terenului

-in profil mixt

-debleu

3. Alegerea alcatuirii sistemului rutier:

Pamant - P5 - Argila nisipoasa vartoasa		$E_p = 70\text{MPa}$	$\mu_p = 0.42$
BA16 rul 50/70	$h_{ba16} = 4\text{cm}$	$E_{ba16} = 3600\text{MPa}$	$\mu_{ba16} = 0.35$
BAD22.4 leg 50/70	$h_{bad22.4} = 6\text{cm}$	$E_{bad22.4} = 3000\text{MPa}$	$\mu_{bad22.4} = 0.35$
Strat piatra sparta impanata	$h_{ps} = 20\text{cm}$	$E_{ps} = 400\text{MPa}$	$\mu_{ps} = 0.27$
Strat balast	$h_{balast} = 350$		$\mu_{balast} = 0.27$
Strat de forma din balast nisipos	$h_{stratforma} = 15\text{cm}$	$E_{echivalent} = 90\text{MPa}$	
		$E_b = 0.2 \cdot h_{balast}^{0.45} \cdot E_{echivalent} = 251.248 \cdot \text{MPa}$	
	$h_{balast} = 35\text{cm}$		

DRUM: CASEIU

Sector omogen: DA

Parametrii problemei sunt

Sarcina..... 57.50 kN
Presiunea pneului 0.625 MPa
Raza cercului 17.11 cm
Stratul 1: Modulul 3231. MPa, Coeficientul Poisson .350, Grosimea 10.00 cm
Stratul 2: Modulul 400. MPa, Coeficientul Poisson .270, Grosimea 20.00 cm
Stratul 3: Modulul 251. MPa, Coeficientul Poisson .270, Grosimea 35.00 cm
Stratul 4: Modulul 90. MPa, Coeficientul Poisson .420 si e semifinit

REZULTATE: EFORT DEFORMATIE DEFORMATIE

R	Z	RADIAL	RADIALA	VERTICALA
cm	cm	MPa	microdef	microdef
.0	-10.00	.871E+00	.215E+03	-.301E+03
.0	10.00	-.165E-01	.215E+03	-.884E+03
.0	.00	-.167E+01	-.269E+03	.169E+03
.0	-65.00	.361E-01	.135E+03	-.188E+03
.0	65.00	.801E-03	.135E+03	-.316E+03

Rata de degradare sub trafic

$$RDO_{adm} := 0.9$$

$$RDO := \frac{N_c}{N_{adm}}$$

$$\epsilon_r := 215$$

$$N_{adm} := 24.5 \cdot 10^8 \cdot \epsilon_r^{-3.97} = 1.347$$

$$RDO := \frac{N_c}{N_{adm}} = 0.223 \quad \text{Verifica}$$

Criteriul deformarii verticale

$$\epsilon_{zadm} := 600 \cdot N_c^{-0.28} = 840.538$$

$$\epsilon_z := 316$$

Verifica

Verificare inghet-dezghet

$$k := \frac{H_e}{Z_{cr}}$$

$$H_e := h_{ba16} \cdot 0.5 + h_{bad22.4} \cdot 0.6 + h_{ps} \cdot 0.75 + h_{balast} \cdot 0.8 + h_{stratforma} \cdot 0.9 = 62.1 \cdot \text{cm}$$

$$H_{sr} := h_{ba16} + h_{bad22.4} + h_{ps} + h_{balast} + h_{stratforma} = 80 \cdot \text{cm}$$

$$\Delta_z := H_{sr} - H_e = 17.9 \cdot \text{cm}$$

Comuna Caseiu, judetul Cluj

$$I_{med5.30} := 560$$

Curba 7

$$z := 86 \text{cm}$$

$$z_{cr} := z + \Delta_z = 103.9 \cdot \text{cm}$$

$$k := \frac{H_e}{z_{cr}} = 0.598$$

$k > 0.55$ Verifica



Intocmit:
Ing. Grivase Catalin



A handwritten signature in blue ink, appearing to read "Grivase Catalin".

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"Modernizare drumuri in comuna Caseiu"
Structura rutiera noua

1. Stabilirea traficului de calcul:

$N_c = 0.3$ mos milioane osii standard

2. Stabilirea capacitatii portante:

-tip pamant : P5 - Argila vartoasa, argila maronie vartoasa

-tip climatic : II

-regim hidrologic : 2B pentru sectoarele de drum situate:

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BAD22.4 leg 50/70	$h_{bad22.4} = 6\text{cm}$	$E_{bad22.4} = 3000\text{MPa}$ $\mu_{bad22.4} = 0.35$
Strat piatra sparta impanata	$h_{ps} = 20\text{cm}$	$E_{ps} = 400\text{MPa}$ $\mu_{ps} = 0.27$
Strat balast	$h_{balast} = 350$	$\mu_{balast} = 0.27$
Strat de forma din balast nisipos	$h_{stratforma} = 15\text{cm}$	$E_{echivalent} = 90\text{MPa}$
	$E_D = 0.2 \cdot h_{balast}^{0.45} \cdot E_{echivalent} = 251.248 \cdot \text{MPa}$	
	$h_{balast} = 35\text{cm}$	



DRUM: CASEIU

Sector omogen: DA

Parametrii problemei sunt

Sarcina..... 57.50 kN
Presiunea pneului 0.625 MPa
Raza cercului 17.11 cm
Stratul 1: Modulul 3231. MPa, Coeficientul Poisson .350, Grosimea 10.00 cm
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Stratul 3: Modulul 251. MPa, Coeficientul Poisson .270, Grosimea 35.00 cm
Stratul 4: Modulul 90. MPa, Coeficientul Poisson .420 si e semifinit

REZULTATE: EFORT DEFORMATIE DEFORMATIE

R	Z	RADIAL	RADIALA	VERTICALA
cm	cm	MPa	microdef	microdef
.0	-10.00	.871E+00	.215E+03	-.301E+03
.0	10.00	-.165E-01	.215E+03	-.884E+03
.0	.00	-.167E+01	-.269E+03	.169E+03
.0	-65.00	.361E-01	.135E+03	-.188E+03
.0	65.00	.801E-03	.135E+03	-.316E+03

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Criteriul deformatii verticale

$$\epsilon_{zadm} := 600 \cdot N_c^{-0.28} = 840.538$$

$$\epsilon_z := 316$$

Verifica

Verificare inghet-dezghet

$$k := \frac{H_e}{Z_{cr}}$$

$$H_e := h_{ba16} \cdot 0.5 + h_{bad22.4} \cdot 0.6 + h_{ps} \cdot 0.75 + h_{balast} \cdot 0.8 + h_{stratforma} \cdot 0.9 = 62.1 \text{ cm}$$

$$H_{sr} := h_{ba16} + h_{bad22.4} + h_{ps} + h_{balast} + h_{stratforma} = 80 \text{ cm}$$

$$\Delta_z := H_{sr} - H_e = 17.9 \text{ cm}$$

Comuna Caseiu, judetul Cluj

$$I_{med5.30} := 560$$

Curba 8

$$z := 81 \text{ cm}$$

$$z_{cr} := z + \Delta_z = 98.9 \text{ cm}$$

$$k := \frac{H_e}{z_{cr}} = 0.628$$

$k > 0.55$ Verifica



Intocmit:
Ing. Grivase Catalin

