

GENERÁLNÍ PROJEKTANT:

**ATELIÉR VELEHRADSKÝ**

Vystaviště 1, 603 00, Brno / IČ: 292 63 140 /  
atelier@velehradsky.cz / +420 547 221 936

SCHÉMA OBJEKTU:



Č. PARÉ:

AUTORIZACE:

NÁZEV AKCE:

**Dostavba kampusu LF a FZV v  
Olomouci**

ODPOVĚDNÝ PROJEKTANT:

**Ing. Jan Mrázek**

DATUM:

**1.1.2021**

MĚŘÍTKO:

FORMÁT:

**A4/A3**

POČET A4:

STAVEBNÍK:

**Univerzita Palackého v Olomouci**

HLAVNÍ INŽENÝR PROJEKTU:

STUPEŇ PD:

**DOKUMENTACE PRO PROVÁDĚNÍ STAVBY**

MÍSTO STAVBY:

**Olomouc, Hněvotínská**

VYPRACOVAL:

**Ing. Jana Dvorská**

STAVEBNÍ  
OBJEKT:

**OPĚRNÁ STĚNA A HTÚ**

ČÁST PD:

**DOKUMENTACE OBJEKTŮ**

**D**

PROFESNÍ ČÁST:

**D.1.2 STAVEBNĚ KONSTRUKČNÍ ŘEŠENÍ**

ČÍSLO REVIZE:

SUBDODAVATEL:



**1449**

**DPS**

**SO 00.2**

**D.1.2**

**GEOTECHNICKÉ POSOUZENÍ**

**08**

```
*****
Program POST      jmeno ulohy :  UPOL1      ctvrtek 11. 2.2021  14:41:14
*****
UPOL_REZ 1A
*****
Vrchol zdi = 240. m
Pata zdi = 231.5 m
Sirka pasu zdi = 1.2 m
-----
1. cast zdi je od koty 240.m  do koty 239.6 m
E zdi = 28000000. kPa
I zdi = 0.0027 m^4
A zdi = 0.36 m^2
-----
2. cast zdi je od koty 239.6m  do koty 239. m
E zdi = 28000000. kPa
I zdi = 0.0614 m^4
A zdi = 1.02 m^2
-----
3. cast zdi je od koty 239.m  do koty 231.5 m
E zdi = 28000000. kPa
I zdi = 0.01553 m^4
A zdi = 0.4418 m^2
*****
P I L O T O V A      S T E N A
-----
Prumer piloty = 0.750 m
Osova vzdalenost pilot = 1.200 m
*****
Pata zdi je kloub s <-- posunem
*****
G E O L O G I E
-----
Geologie
-----
      koty[m]      gama[kN/m^3]      fi[st]      c[kPa]      k[kN/m^3]      delta[st]
-----
240.00 -238.10      18.50      25.00      3.00      4500.00      16.70
238.10 -235.00      18.50      26.00      5.00      6000.00      17.33
235.00 -234.10      20.50      24.00      4.00      5000.00      16.00
234.10 -232.60      18.50      28.00      3.00      10000.00      18.70
232.60 -231.50      18.50      26.00      5.00      6000.00      17.33
*****
Redukcni koeficient pro aktivni tlak ze strany terenu Kma = 1.000
-----
Redukcni koeficient pro pasivni tlak ze strany jamy Kr = 1.000
*****
Podzemni voda od koty 231.5 m do koty 231.5 m
*****
Zed neni osazena kotvami
*****
      kota [m]      pritizeni [kN/m^2]
-----
240.00      40.000
*****
Min. pocet dilku zdi = 30
*****
P O P I S      Z A T E Z O V A C I C H      S T A V U
-----
      Zatezovací stav c. 1
kota dna jamy = 237.00 m      pritizeni dna jamy =      0.00 kN/m^2
kota vody ze strany jamy = 231.80 m
*****
```

\*\*\*\*\*  
Program POST jmeno ulohy : UPOL1 ctvrtek 11. 2.2021 14:41:14  
\*\*\*\*\*  
UPOL\_REZ 1A  
\*\*\*\*\*  
Zatezovací stav c. 1 kota dna jamy = 237.00 m  
\*\*\*\*\*

D E F O R M A C E			
kota [m]	u [m]	v [m]	fi [rad]
240.00	-0.03378544	-0.00000000	0.00000000
239.60	-0.03182360	-0.00000000	-0.00490274
239.30	-0.03035283	-0.00000000	-0.00490234
239.00	-0.02888225	-0.00000000	-0.00490139
238.70	-0.02741281	-0.00000000	-0.00489423
238.40	-0.02594618	-0.00000000	-0.00488237
238.10	-0.02448400	-0.00000000	-0.00486434
237.90	-0.02351269	-0.00000000	-0.00484817
237.60	-0.02206276	-0.00000000	-0.00481641
237.30	-0.02062388	-0.00000000	-0.00477428
237.00	-0.01919940	-0.00000000	-0.00472006
236.80	-0.01825965	-0.00000000	-0.00467642
236.50	-0.01686798	-0.00000000	-0.00459900
236.20	-0.01550164	-0.00000000	-0.00450770
235.90	-0.01416456	-0.00000000	-0.00440443
235.60	-0.01285984	-0.00000000	-0.00429264
235.30	-0.01158941	-0.00000000	-0.00417644
235.00	-0.01035404	-0.00000000	-0.00405950
234.70	-0.00915349	-0.00000000	-0.00394480
234.40	-0.00798673	-0.00000000	-0.00383442
234.10	-0.00685225	-0.00000000	-0.00372988
233.80	-0.00574803	-0.00000000	-0.00363307
233.50	-0.00467135	-0.00000000	-0.00354684
233.20	-0.00361859	-0.00000000	-0.00347401
232.90	-0.00258540	-0.00000000	-0.00341663
232.60	-0.00156698	-0.00000000	-0.00337555
232.40	-0.00089385	-0.00000000	-0.00335689
232.10	0.00011036	-0.00000000	-0.00333986
231.80	0.00111108	-0.00000000	-0.00333288
231.50	0.00211064	0.00000000	0.00000000
*****			

V N I T R N I S I L Y			
kota [m]	M [kNm]	N [kN]	T [kN]
240.00	0.0000	0.0000	-2.6423
239.60	-1.0569	0.0000	-8.0046
239.30	-3.4583	-0.0000	-13.3488
239.00	-7.4629	-0.0000	-19.3834
238.70	-13.2779	-0.0000	-26.1084
238.40	-21.1105	-0.0000	-33.5239
238.10	-31.1676	-0.0000	-39.8407
237.90	-39.1357	-0.0000	-46.0380
237.60	-52.9472	-0.0000	-54.0817
237.30	-69.1717	-0.0000	-62.7876
237.00	-88.0079	-0.0000	-68.7554
236.80	-101.7590	-0.0000	-69.7496
236.50	-122.6839	-0.0000	-64.3336
236.20	-141.9840	-0.0000	-51.3866
235.90	-157.4000	-0.0000	-30.8277
235.60	-166.6483	-0.0000	-11.8893
235.30	-170.2151	-0.0000	4.7650
235.00	-168.7856	-0.0000	16.8567
234.70	-163.7286	-0.0000	24.9346
234.40	-156.2482	-0.0000	31.4276
234.10	-146.8199	-0.0000	43.3669
233.80	-133.8099	-0.0000	58.7718
233.50	-116.1783	-0.0000	70.7526
233.20	-94.9526	-0.0000	78.5668
232.90	-71.3825	-0.0000	78.9422
232.60	-47.6998	-0.0000	71.2837
232.40	-33.4431	-0.0000	58.4109
232.10	-15.9198	-0.0000	38.6253
231.80	-4.3323	-0.0000	14.4408
231.50	-0.0000		
*****			

H O R N I N O V Y T L A K			
kota [m]	SigmaX[kPa]	SigPj-SigAt[kPa]	SigAj-SigPt[kPa]
240.00	-11.0094	-11.0094	-175.3283
239.60	-12.7674	-12.7674	-195.2303
239.30	-14.8450	-14.8450	-218.7507

239.00	-16.7628	-16.7628	-240.4619
238.70	-18.6806	-18.6806	-262.1731
238.40	-20.5984	-20.5984	-283.8843
238.10	-21.0561	-21.0561	-315.8663
237.90	-20.6578	-20.6578	-353.0065
237.60	-22.3437	-22.3437	-374.3659
237.30	-24.1828	-24.1828	-397.6671
237.00	-19.8929	-19.8929	-419.0266
236.80	-3.3139	-3.3139	-438.4442
236.50	15.0446	15.0446	-459.8037
236.20	35.9637	35.9637	-483.1049
235.90	57.1081	57.1081	-505.2870
235.60	52.6067	78.3619	-526.7490
235.30	46.2620	99.6769	-548.2111
235.00	33.5880	106.5400	-529.3512
234.70	22.4385	112.6144	-509.5458
234.40	18.0363	132.2978	-529.7471
234.10	33.1646	188.0019	-644.0972
233.80	42.7913	246.9265	-762.3715
233.50	33.2800	272.6643	-787.8051
233.20	21.7063	298.3619	-813.2386
232.90	1.0425	324.0220	-838.6722
232.60	-25.5282	325.6955	-815.4114
232.40	-42.9094	316.4337	-764.4271
232.10	-54.9599	335.2020	-784.1007
231.80	-67.1791	355.1716	-805.6870
231.50	-80.2269	369.0234	-822.4049
*****			
Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 4.235			
*****			

*****		
MAX .	MOMENTY	ZE VSECH ZAT . STAVU
-----		
kota [m]	Mmin [kNm]	Mmax [kNm]
-----		
240.00	0.0000	0.0000
239.60	-1.0569	-1.0569
239.30	-3.4583	-3.4583
239.00	-7.4629	-7.4629
238.70	-13.2779	-13.2779
238.40	-21.1105	-21.1105
238.10	-31.1676	-31.1676
237.90	-39.1357	-39.1357
237.60	-52.9472	-52.9472
237.30	-69.1717	-69.1717
237.00	-88.0079	-88.0079
236.80	-101.7590	-101.7590
236.50	-122.6839	-122.6839
236.20	-141.9840	-141.9840
235.90	-157.4000	-157.4000
235.60	-166.6483	-166.6483
235.30	-170.2151	-170.2151
235.00	-168.7856	-168.7856
234.70	-163.7286	-163.7286
234.40	-156.2482	-156.2482
234.10	-146.8199	-146.8199
233.80	-133.8099	-133.8099
233.50	-116.1783	-116.1783
233.20	-94.9526	-94.9526
232.90	-71.3825	-71.3825
232.60	-47.6998	-47.6998
232.40	-33.4431	-33.4431
232.10	-15.9198	-15.9198
231.80	-4.3323	-4.3323
231.50	-0.0000	-0.0000
*****		

```
*****
Program POST      jmeno ulohy :  UPOL3      ctvrtek 11. 2.2021  14:47:22
*****
UPOL_REZ 1B
*****
Vrchol zdi = 240. m
Pata zdi = 231.5 m
Sirka pasu zdi = 1.2 m
-----
1. cast zdi je od koty 240.m  do koty 239.6 m
E zdi = 28000000. kPa
I zdi = 0.00429 m^4
A zdi = 0.42 m^2
-----
2. cast zdi je od koty 239.6m  do koty 239. m
E zdi = 28000000. kPa
I zdi = 0.00614 m^4
A zdi = 1.02 m^2
-----
3. cast zdi je od koty 239.m  do koty 231.5 m
E zdi = 28000000. kPa
I zdi = 0.01553 m^4
A zdi = 0.4418 m^2
*****
P I L O T O V A      S T E N A
-----
Prumer piloty = 0.750 m
Osova vzdalenost pilot = 1.200 m
*****
Pata zdi je kloub s <-- posunem
*****
G E O L O G I E
-----
Geologie
-----
      koty[m]      gama[kN/m^3]      fi[st]      c[kPa]      k[kN/m^3]      delta[st]
-----
240.00 -238.10      18.50      25.00      3.00      4500.00      16.70
238.10 -235.00      18.50      26.00      5.00      6000.00      17.33
235.00 -234.10      20.50      24.00      4.00      5000.00      16.00
234.10 -232.60      18.50      28.00      3.00      10000.00     18.70
232.60 -231.50      18.50      26.00      5.00      6000.00      17.33
*****
Redukcni koeficient pro aktivni tlak ze strany terenu Kma = 1.000
-----
Redukcni koeficient pro pasivni tlak ze strany jamy Kr = 1.000
*****
Podzemni voda od koty 231.5 m do koty 231.5 m
*****
K O T V Y
-----
kota [m]      sklon [st]      delka [m]      E [kPa]      A [m^2]      sila [kN]
-----
238.25      30.00      8.00      210000000.0      0.0003000      100.00
*****
kota [m]      pritizeni [kN/m^2]
-----
240.00      40.000
*****
Min. pocet dilku zdi = 30
*****
P O P I S      Z A T E Z O V A C I C H      S T A V U
-----
      Zatezovací stav c. 1
kota dna jamy = 237.95 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.50 m
-----
      Zatezovací stav c. 2
kota dna jamy = 237.95 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.50 m      pridana kotva c. 1
-----
      Zatezovací stav c. 3
kota dna jamy = 235.50 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.50 m
*****
```

*****			
Program	POST	jmeno ulohy : UPOL3	ctvrtek 11. 2.2021 14:47:22
*****			
UPOL_REZ 1B			
*****			
Zatezovací stav c. 1      kota dna jamy = 237.95 m			
*****			
D E F O R M A C E			
-----			
kota [m]	u [m]	v [m]	fi [rad]
-----			
240.00	-0.01237572	-0.00000000	0.00000000
239.60	-0.01167294	-0.00000000	-0.00175578
239.30	-0.01114670	-0.00000000	-0.00175184
239.00	-0.01062240	-0.00000000	-0.00174231
238.85	-0.01036127	-0.00000000	-0.00173928
238.65	-0.01001394	-0.00000000	-0.00173362
238.45	-0.00966796	-0.00000000	-0.00172578
238.25	-0.00932381	-0.00000000	-0.00171531
238.10	-0.00906723	-0.00000000	-0.00170547
237.95	-0.00881226	-0.00000000	-0.00169370
237.60	-0.00822538	-0.00000000	-0.00165796
237.30	-0.00773374	-0.00000000	-0.00161833
237.00	-0.00725508	-0.00000000	-0.00157173
236.70	-0.00679122	-0.00000000	-0.00151993
236.40	-0.00634348	-0.00000000	-0.00146456
236.10	-0.00591268	-0.00000000	-0.00140718
235.80	-0.00549922	-0.00000000	-0.00134923
235.50	-0.00510307	-0.00000000	-0.00129204
235.20	-0.00472380	-0.00000000	-0.00123688
235.00	-0.00447996	-0.00000000	-0.00120175
234.70	-0.00412699	-0.00000000	-0.00115202
234.40	-0.00378840	-0.00000000	-0.00110574
234.10	-0.00346325	-0.00000000	-0.00106242
233.80	-0.00315066	-0.00000000	-0.00102204
233.50	-0.00284962	-0.00000000	-0.00098573
233.20	-0.00255868	-0.00000000	-0.00095486
232.90	-0.00227606	-0.00000000	-0.00093039
232.60	-0.00199975	-0.00000000	-0.00091285
232.40	-0.00181802	-0.00000000	-0.00090497
232.10	-0.00154772	-0.00000000	-0.00089790
231.80	-0.00127885	-0.00000000	-0.00089508
231.50	-0.00101045	0.00000000	0.00000000
*****			
V N I T R N I      S I L Y			
-----			
kota [m]	M [kNm]	N [kN]	T [kN]
-----			
240.00	0.0000	0.0000	-2.6423
239.60	-1.0569	0.0000	-8.0046
239.30	-3.4583	-0.0000	-13.3488
239.00	-7.4629	-0.0000	-17.8100
238.85	-10.1344	-0.0000	-21.5484
238.65	-14.4441	-0.0000	-26.1084
238.45	-19.6658	-0.0000	-30.9753
238.25	-25.8608	-0.0000	-35.4856
238.10	-31.1837	-0.0000	-39.2462
237.95	-37.0706	-0.0000	-41.8780
237.60	-51.7279	-0.0000	-38.0864
237.30	-63.1538	-0.0000	-29.2739
237.00	-71.9360	-0.0000	-21.0352
236.70	-78.2466	-0.0000	-13.3384
236.40	-82.2481	-0.0000	-6.1487
236.10	-84.0927	-0.0000	0.5705
235.80	-83.9216	-0.0000	6.8567
235.50	-81.8646	-0.0000	12.7473
235.20	-78.0404	-0.0000	16.6234
235.00	-74.7157	-0.0000	17.5653
234.70	-69.4461	-0.0000	15.7797
234.40	-64.7122	-0.0000	12.7751
234.10	-60.8797	-0.0000	15.7138
233.80	-56.1656	-0.0000	23.5156
233.50	-49.1109	-0.0000	29.1499
233.20	-40.3659	-0.0000	32.6895
232.90	-30.5590	-0.0000	34.1942
232.60	-20.3008	-0.0000	31.5797
232.40	-13.9848	-0.0000	24.9951
232.10	-6.4863	-0.0000	15.9259
231.80	-1.7085	-0.0000	5.6951
231.50	-0.0000		
*****			
K O T V Y			
-----			
kota [m]	F [kN]		

-----			
238.25	0.0000		
*****			
H O R N I N O V Y      T L A K			
-----			
kota [m]	SigmaX[kPa]	SigPj-SigAt[kPa]	SigAj-SigPt[kPa]
-----			
240.00	-11.0094	-11.0094	-175.3283
239.60	-12.7674	-12.7674	-195.2303
239.30	-14.8450	-14.8450	-218.7507
239.00	-16.5231	-16.5231	-237.7480
238.85	-17.8016	-17.8016	-252.2221
238.65	-19.0003	-19.0003	-265.7916
238.45	-20.2788	-20.2788	-280.2658
238.25	-21.4774	-21.4774	-293.8353
238.10	-20.8924	-20.8924	-320.6624
237.95	-8.7727	-8.7727	-351.0647
237.60	9.7221	9.7221	-373.3950
237.30	24.4792	31.2872	-397.6671
237.00	22.8852	52.3414	-420.6386
236.70	21.3799	73.5491	-442.2308
236.40	19.9714	94.8375	-463.6929
236.10	18.6645	116.1734	-485.1550
235.80	17.4617	137.5398	-506.6171
235.50	16.3627	158.9267	-528.0792
235.20	12.9207	177.6024	-547.7527
235.00	3.1396	174.0597	-516.9443
234.70	-4.9602	176.6164	-503.2100
234.40	-8.3460	196.4172	-523.4113
234.10	8.1630	263.0959	-638.2553
233.80	21.6718	332.7425	-757.0234
233.50	15.6509	358.3880	-782.4569
233.20	9.8322	384.0215	-807.8904
232.90	4.1798	409.6389	-833.3240
232.60	-8.7150	406.4345	-809.8729
232.40	-21.9487	390.0628	-758.6032
232.10	-25.1923	408.8200	-778.2767
231.80	-28.4187	430.3469	-799.7388
231.50	-31.6396	451.9465	-815.8354
*****			
Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 5.777			
*****			

\*\*\*\*\*  
Program POST jmeno ulohy : UPOL3 ctvrtek 11. 2.2021 14:47:22  
\*\*\*\*\*  
UPOL\_REZ 1B  
\*\*\*\*\*  
Zatezovací stav c. 2 kota dna jamy = 237.95 m pridana kotva c. 1  
\*\*\*\*\*  
D E F O R M A C E  
-----  
kota [m] u [m] v [m] fi [rad]  
-----  
240.00 -0.00210889 -0.00002728 0.00000000  
239.60 -0.00215446 -0.00002728 0.00011519  
239.30 -0.00218955 -0.00002728 0.00011956  
239.00 -0.00222684 -0.00002728 0.00013036  
238.85 -0.00224664 -0.00002728 0.00013384  
238.65 -0.00227402 -0.00002728 0.00014040  
238.45 -0.00230298 -0.00002728 0.00014961  
238.25 -0.00233408 -0.00002728 0.00016203  
238.10 -0.00235913 -0.00002668 0.00017157  
237.95 -0.00238545 -0.00002607 0.00017902  
237.60 -0.00245021 -0.00002466 0.00018950  
237.30 -0.00250752 -0.00002344 0.00019160  
237.00 -0.00256465 -0.00002223 0.00018846  
236.70 -0.00262017 -0.00002102 0.00018106  
236.40 -0.00267295 -0.00001981 0.00017035  
236.10 -0.00272214 -0.00001859 0.00015721  
235.80 -0.00276712 -0.00001738 0.00014251  
235.50 -0.00280757 -0.00001617 0.00012704  
235.20 -0.00284335 -0.00001496 0.00011158  
235.00 -0.00286466 -0.00001415 0.00010162  
234.70 -0.00289305 -0.00001293 0.00008793  
234.40 -0.00291768 -0.00001172 0.00007676  
234.10 -0.00293949 -0.00001051 0.00006938  
233.80 -0.00295975 -0.00000930 0.00006642  
233.50 -0.00297971 -0.00000808 0.00006719  
233.20 -0.00300030 -0.00000687 0.00007036  
232.90 -0.00302203 -0.00000566 0.00007455  
232.60 -0.00304499 -0.00000445 0.00007835  
232.40 -0.00306085 -0.00000364 0.00008015  
232.10 -0.00308516 -0.00000243 0.00008169  
231.80 -0.00310977 -0.00000121 0.00008228  
231.50 -0.00313448 0.00000000 0.00000000  
\*\*\*\*\*

V N I T R N I S I L Y  
-----  
kota [m] M [kNm] N [kN] T [kN]  
-----  
240.00 0.0000 0.0000 -2.8691  
239.60 -1.1476 0.0000 -9.0376  
239.30 -3.8589 -0.0000 -15.5177  
239.00 -8.5142 -0.0000 -21.0896  
238.85 -11.6777 -0.0000 -25.8532  
238.65 -16.8483 -0.0000 -31.7484  
238.45 -23.1980 -0.0000 -38.1251  
238.25 -30.8230 -50.0000 42.5067  
238.10 -24.4470 -50.0000 37.6825  
237.95 -18.7946 -50.0000 33.0449  
237.60 -7.2289 -50.0000 27.8286  
237.30 1.1197 -50.0000 22.9057  
237.00 7.9914 -50.0000 18.2296  
236.70 13.4603 -50.0000 13.7934  
236.40 17.5983 -50.0000 9.5851  
236.10 20.4738 -50.0000 5.5894  
235.80 22.1506 -50.0000 1.7880  
235.50 22.6870 -50.0000 -1.8387  
235.20 22.1354 -50.0000 -4.7321  
235.00 21.1890 -50.0000 -9.0238  
234.70 18.4819 -50.0000 -15.2516  
234.40 13.9064 -50.0000 -21.3908  
234.10 7.4891 -50.0000 -21.2805  
233.80 1.1050 -50.0000 -14.8532  
233.50 -3.3510 -50.0000 -8.2822  
233.20 -5.8356 -50.0000 -1.5629  
232.90 -6.3045 -50.0000 5.3128  
232.60 -4.7107 -50.0000 7.9663  
232.40 -3.1174 -50.0000 5.8559  
232.10 -1.3607 -50.0000 3.4284  
231.80 -0.3322 -50.0000 1.1072  
231.50 -0.0000  
\*\*\*\*\*

K O T V Y  
-----  
kota [m] F [kN]

-----  
238.25 100.0000  
\*\*\*\*\*  
H O R N I N O V Y T L A K  
-----  
kota [m] SigmaX[kPa] SigPj-SigAt[kPa] SigAj-SigPt[kPa]  
-----  
240.00 -11.9545 -11.0094 -175.3283  
239.60 -14.6869 -12.7674 -195.2303  
239.30 -18.0005 -14.8450 -218.7507  
239.00 -20.6366 -16.5231 -237.7480  
238.85 -22.6838 -17.8016 -252.2221  
238.65 -24.5634 -19.0003 -265.7916  
238.45 -26.5694 -20.2788 -280.2658  
238.25 -28.4322 -21.4774 -293.8353  
238.10 -26.8010 -20.8924 -320.6624  
237.95 -15.4589 -8.7727 -351.0647  
237.60 -13.3751 9.7221 -373.3950  
237.30 -13.6747 31.2872 -397.6671  
237.00 -12.9892 52.3414 -420.6386  
236.70 -12.3229 73.5491 -442.2308  
236.40 -11.6895 94.8375 -463.6929  
236.10 -11.0993 116.1734 -485.1550  
235.80 -10.5594 137.5398 -506.6171  
235.50 -10.0741 158.9267 -528.0792  
235.20 -9.6447 177.6024 -547.7527  
235.00 -14.3056 174.0597 -516.9443  
234.70 -17.2995 176.6164 -503.2100  
234.40 -17.0533 196.4172 -523.4113  
234.10 0.3066 263.0959 -638.2553  
233.80 17.8535 332.7425 -757.0234  
233.50 18.2528 358.3880 -782.4569  
233.20 18.6646 384.0215 -807.8904  
232.90 19.0992 409.6389 -833.3240  
232.60 8.8450 406.4345 -809.8729  
232.40 -7.0347 390.0628 -758.6032  
232.10 -6.7430 408.8200 -778.2767  
231.80 -6.4477 430.3469 -799.7388  
231.50 -6.1512 451.9465 -815.8354  
\*\*\*\*\*  
Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 7.379  
\*\*\*\*\*

\*\*\*\*\*  
Program POST jmeno ulohy : UPOL3 ctvrtek 11. 2.2021 14:47:22  
\*\*\*\*\*  
UPOL\_REZ 1B  
\*\*\*\*\*  
Zatezovací stav c. 3 kota dna jamy = 235.50 m  
\*\*\*\*\*  
D E F O R M A C E  
-----  
kota [m] u [m] v [m] fi [rad]  
-----  
240.00 -0.00517348 -0.00003307 0.00000000  
239.60 -0.00523141 -0.00003307 0.00014600  
239.30 -0.00527570 -0.00003307 0.00014994  
239.00 -0.00532194 -0.00003307 0.00015947  
238.85 -0.00534607 -0.00003307 0.00016250  
238.65 -0.00537911 -0.00003307 0.00016816  
238.45 -0.00541348 -0.00003307 0.00017600  
238.25 -0.00544968 -0.00003307 0.00018647  
238.10 -0.00547823 -0.00003234 0.00019359  
237.95 -0.00550758 -0.00003160 0.00019722  
237.60 -0.00557641 -0.00002989 0.00019331  
237.30 -0.00563230 -0.00002842 0.00017750  
237.00 -0.00568195 -0.00002695 0.00015206  
236.70 -0.00572276 -0.00002548 0.00011885  
236.40 -0.00575269 -0.00002401 0.00007988  
236.10 -0.00577033 -0.00002254 0.00003731  
235.80 -0.00577494 -0.00002107 -0.00000660  
235.50 -0.00576647 -0.00001960 -0.00004942  
235.20 -0.00574562 -0.00001813 -0.00008890  
235.00 -0.00572542 -0.00001715 -0.00011266  
234.70 -0.00568680 -0.00001568 -0.00014387  
234.40 -0.00563972 -0.00001421 -0.00016891  
234.10 -0.00558620 -0.00001274 -0.00018654  
233.80 -0.00552857 -0.00001127 -0.00019645  
233.50 -0.00546898 -0.00000980 -0.00019990  
233.20 -0.00540907 -0.00000833 -0.00019885  
232.90 -0.00534992 -0.00000686 -0.00019529  
232.60 -0.00529195 -0.00000539 -0.00019128  
232.40 -0.00525391 -0.00000441 -0.00018919  
232.10 -0.00519747 -0.00000294 -0.00018733  
231.80 -0.00514140 -0.00000147 -0.00018659  
231.50 -0.00508546 0.00000000 0.00000000  
\*\*\*\*\*

V N I T R N I S I L Y  
-----  
kota [m] M [kNm] N [kN] T [kN]  
-----  
240.00 0.0000 0.0000 -2.6423  
239.60 -1.0569 0.0000 -8.0046  
239.30 -3.4583 -0.0000 -13.3488  
239.00 -7.4629 -0.0000 -17.8100  
238.85 -10.1344 -0.0000 -21.5484  
238.65 -14.4441 -0.0000 -26.1084  
238.45 -19.6658 -0.0000 -30.9753  
238.25 -25.8608 -60.6127 69.4987  
238.10 -15.4360 -60.6127 65.7381  
237.95 -5.5753 -60.6127 59.5867  
237.60 15.2800 -60.6127 50.9026  
237.30 30.5508 -60.6127 42.1967  
237.00 43.2098 -60.6127 32.8288  
236.70 53.0585 -60.6127 22.7988  
236.40 59.8981 -60.6127 12.1068  
236.10 63.5302 -60.6127 0.7526  
235.80 63.7559 -60.6127 -11.2636  
235.50 60.3768 -60.6127 -21.0344  
235.20 54.0665 -60.6127 -23.9818  
235.00 49.2702 -60.6127 -26.8994  
234.70 41.2003 -60.6127 -32.7500  
234.40 31.3753 -60.6127 -38.7701  
234.10 19.7443 -60.6127 -35.8625  
233.80 8.9855 -60.6127 -26.5477  
233.50 1.0212 -60.6127 -16.9954  
233.20 -4.0774 -60.6127 -7.2068  
232.90 -6.2394 -60.6127 2.8209  
232.60 -5.3932 -60.6127 8.5023  
232.40 -3.6927 -60.6127 6.6502  
232.10 -1.6977 -60.6127 4.1838  
231.80 -0.4425 -60.6127 1.4752  
231.50 -0.0000  
\*\*\*\*\*

K O T V Y  
-----  
kota [m] F [kN]

-----  
238.25 121.2254  
\*\*\*\*\*  
H O R N I N O V Y T L A K  
-----  
kota [m] SigmaX[kPa] SigPj-SigAt[kPa] SigAj-SigPt[kPa]  
-----  
240.00 -11.0094 -11.0094 -175.3283  
239.60 -12.7674 -12.7674 -195.2303  
239.30 -14.8450 -14.8450 -218.7507  
239.00 -16.5231 -16.5231 -237.7480  
238.85 -17.8016 -17.8016 -252.2221  
238.65 -19.0003 -19.0003 -265.7916  
238.45 -20.2788 -20.2788 -280.2658  
238.25 -21.4774 -21.4774 -293.8353  
238.10 -20.8924 -20.8924 -320.6624  
237.95 -20.5046 -20.5046 -351.0647  
237.60 -22.2671 -22.2671 -373.3950  
237.30 -24.1828 -24.1828 -397.6671  
237.00 -26.0220 -26.0220 -420.9683  
236.70 -27.8611 -27.8611 -444.2695  
236.40 -29.7002 -29.7002 -467.5707  
236.10 -31.5393 -31.5393 -490.8720  
235.80 -33.3785 -33.3785 -514.1732  
235.50 -27.1411 -27.1411 -537.4744  
235.20 -9.8244 -9.8244 -558.8338  
235.00 -9.7255 -0.0525 -531.1174  
234.70 -16.2517 11.9043 -519.5497  
234.40 -16.7225 31.1144 -539.7510  
234.10 8.0767 69.4318 -653.3214  
233.80 25.8745 111.9162 -770.8160  
233.50 26.5341 137.8746 -796.2495  
233.20 27.1906 163.6570 -821.6831  
232.90 27.8546 189.3317 -847.1166  
232.60 18.9382 198.6578 -824.1563  
232.40 -6.1738 200.3657 -773.6227  
232.10 -6.8511 219.0808 -793.2963  
231.80 -7.5239 240.4762 -814.7584  
231.50 -8.1953 261.8657 -830.8549  
\*\*\*\*\*

Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 3.269  
\*\*\*\*\*

*****		
MAX .	M O M E N T Y	Z E V S E C H Z A T . S T A V U
-----		
kota [m]	Mmin [kNm]	Mmax [kNm]
-----		
240.00	0.0000	0.0000
239.60	-1.1476	-1.0569
239.30	-3.8589	-3.4583
239.00	-8.5142	-7.4629
238.85	-11.6777	-10.1344
238.65	-16.8483	-14.4441
238.45	-23.1980	-19.6658
238.25	-30.8230	-25.8608
238.10	-31.1837	-15.4360
237.95	-37.0706	-5.5753
237.60	-51.7279	15.2800
237.30	-63.1538	30.5508
237.00	-71.9360	43.2098
236.70	-78.2466	53.0585
236.40	-82.2481	59.8981
236.10	-84.0927	63.5302
235.80	-83.9216	63.7559
235.50	-81.8646	60.3768
235.20	-78.0404	54.0665
235.00	-74.7157	49.2702
234.70	-69.4461	41.2003
234.40	-64.7122	31.3753
234.10	-60.8797	19.7443
233.80	-56.1656	8.9855
233.50	-49.1109	1.0212
233.20	-40.3659	-4.0774
232.90	-30.5590	-6.2394
232.60	-20.3008	-4.7107
232.40	-13.9848	-3.1174
232.10	-6.4863	-1.3607
231.80	-1.7085	-0.3322
231.50	-0.0000	-0.0000
*****		

```
*****
Program POST      jmeno ulohy :  UPOL2      ctvrtek 11. 2.2021  14:49:18
*****
UPOL_REZ 2
*****
Vrchol zdi = 240. m
Pata zdi = 231.65 m
Sirka pasu zdi = 1.2 m
-----
1. cast zdi je od koty 240.m  do koty 239.15 m
E zdi = 28000000. kPa
I zdi = 0.0155 m^4
A zdi = 1.02 m^2
-----
2. cast zdi je od koty 239.15m  do koty 231.65 m
E zdi = 28000000. kPa
I zdi = 0.01553 m^4
A zdi = 0.4418 m^2
*****
P I L O T O V A      S T E N A
-----
Prumer piloty = 0.750 m
Osova vzdalenost pilot = 1.200 m
*****
Pata zdi je kloub s <-- posunem
*****
G E O L O G I E
-----
Geologie
-----
      koty[m]      gama[kN/m^3]      fi[st]      c[kPa]      k[kN/m^3]      delta[st]
-----
240.00 -238.10      18.50      25.00      3.00      4500.00      16.70
238.10 -235.00      18.50      26.00      5.00      6000.00      17.33
235.00 -234.10      20.50      24.00      4.00      5000.00      16.00
234.10 -232.60      18.50      28.00      3.00      10000.00     18.70
232.60 -231.65      18.50      26.00      5.00      6000.00      17.33
*****
Redukcni koeficient pro aktivni tlak ze strany terenu Kma = 1.000
-----
Redukcni koeficient pro pasivni tlak ze strany jamy Kr = 1.000
*****
Podzemni voda od koty 231.65 m do koty 231.65 m
*****
K O T V Y
-----
kota [m]      sklon [st]      delka [m]      E [kPa]      A [m^2]      sila [kN]
-----
239.50      30.00      12.00      210000000.0      0.0004500      120.00
*****
kota [m]      pritizeni [kN/m^2]
-----
240.00      40.000
*****
Min. pocet dilku zdi = 30
*****
P O P I S      Z A T E Z O V A C I C H      S T A V U
-----
      Zatezovací stav c. 1
kota dna jamy = 239.15 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.65 m
-----
      Zatezovací stav c. 2
kota dna jamy = 239.15 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.65 m      pridana kotva c. 1
-----
      Zatezovací stav c. 3
kota dna jamy = 234.40 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.65 m
*****
```

\*\*\*\*\*  
Program POST jmeno ulohy : UPOL2 ctvrtek 11. 2.2021 14:49:18  
\*\*\*\*\*  
UPOL\_REZ 2  
\*\*\*\*\*  
Zatezovací stav c. 1 kota dna jamy = 239.15 m  
\*\*\*\*\*

D E F O R M A C E			
kota [m]	u [m]	v [m]	fi [rad]
240.00	-0.00472734	-0.00000000	0.00000000
239.70	-0.00456845	-0.00000000	-0.00052948
239.50	-0.00446260	-0.00000000	-0.00052896
239.15	-0.00427787	-0.00000000	-0.00052615
239.00	-0.00419910	-0.00000000	-0.00052398
238.70	-0.00404282	-0.00000000	-0.00051742
238.40	-0.00388894	-0.00000000	-0.00050797
238.10	-0.00373831	-0.00000000	-0.00049576
237.70	-0.00354387	-0.00000000	-0.00047584
237.40	-0.00340363	-0.00000000	-0.00045890
237.10	-0.00326861	-0.00000000	-0.00044110
236.80	-0.00313899	-0.00000000	-0.00042308
236.50	-0.00301473	-0.00000000	-0.00040539
236.20	-0.00289568	-0.00000000	-0.00038844
235.90	-0.00278157	-0.00000000	-0.00037253
235.60	-0.00267204	-0.00000000	-0.00035789
235.30	-0.00256670	-0.00000000	-0.00034460
235.00	-0.00246514	-0.00000000	-0.00033269
234.70	-0.00236697	-0.00000000	-0.00032195
234.40	-0.00227191	-0.00000000	-0.00031183
234.10	-0.00217988	-0.00000000	-0.00030161
233.80	-0.00209099	-0.00000000	-0.00029094
233.50	-0.00200531	-0.00000000	-0.00028034
233.20	-0.00192269	-0.00000000	-0.00027066
232.90	-0.00184274	-0.00000000	-0.00026262
232.60	-0.00176489	-0.00000000	-0.00025682
232.25	-0.00167575	-0.00000000	-0.00025308
231.95	-0.00160003	-0.00000000	-0.00025191
231.65	-0.00152451	0.00000000	0.00000000

V N I T R N I S I L Y			
kota [m]	M [kNm]	N [kN]	T [kN]
240.00	0.0000	0.0000	-1.9529
239.70	-0.5859	0.0000	-5.5914
239.50	-1.7042	-0.0000	-10.1474
239.15	-5.2558	-0.0000	-13.9868
239.00	-7.3538	-0.0000	-14.2959
238.70	-11.6425	-0.0000	-13.7200
238.40	-15.7585	-0.0000	-12.9301
238.10	-19.6376	-0.0000	-10.0852
237.70	-23.6717	-0.0000	-5.8861
237.40	-25.4375	-0.0000	-2.4493
237.10	-26.1723	-0.0000	0.4043
236.80	-26.0510	-0.0000	2.6979
236.50	-25.2416	-0.0000	4.4547
236.20	-23.9052	-0.0000	5.6972
235.90	-22.1960	-0.0000	6.4468
235.60	-20.2620	-0.0000	6.7231
235.30	-18.2451	-0.0000	6.5444
235.00	-16.2818	-0.0000	4.7222
234.70	-14.8651	-0.0000	1.3418
234.40	-14.4625	-0.0000	-2.3808
234.10	-15.1768	-0.0000	-1.8816
233.80	-15.7413	-0.0000	2.5306
233.50	-14.9821	-0.0000	6.3258
233.20	-13.0843	-0.0000	9.5262
232.90	-10.2265	-0.0000	12.1511
232.60	-6.5811	-0.0000	11.0584
232.25	-2.7107	-0.0000	6.6952
231.95	-0.7021	-0.0000	2.3405
231.65	-0.0000		

K O T V Y	
kota [m]	F [kN]
239.50	0.0000

H O R N I N O V Y T L A K			
kota [m]	SigmaX[kPa]	SigPj-SigAt[kPa]	SigAj-SigPt[kPa]

240.00	-10.8496	-10.8496	-173.5191
239.70	-12.1281	-12.1281	-187.9932
239.50	-13.8062	-13.8062	-206.9905
239.15	-12.7978	-12.7978	-225.9878
239.00	-1.1451	-1.1451	-243.1758
238.70	1.5998	13.4006	-262.1731
238.40	2.1940	31.9603	-282.5416
238.10	6.7737	62.2891	-322.8068
237.70	9.9978	92.4070	-361.5455
237.40	9.5468	116.0974	-384.7961
237.10	7.9266	137.5333	-406.2582
236.80	6.3711	158.9667	-427.7203
236.50	4.8800	180.4006	-449.1824
236.20	3.4514	201.8365	-470.6444
235.90	2.0820	223.2746	-492.1065
235.60	0.7677	244.7148	-513.5686
235.30	-0.4964	266.1571	-535.0307
235.00	-5.0617	262.0787	-515.5916
234.70	-9.3899	257.4595	-495.2069
234.40	-10.3405	277.3586	-515.4082
234.10	1.3865	357.8805	-630.8759
233.80	12.2560	441.1873	-750.2678
233.50	10.5424	466.7686	-775.7013
233.20	8.8901	492.3495	-801.1349
232.90	7.2912	517.9257	-826.5684
232.60	-2.8017	502.2099	-789.5177
232.25	-11.1878	489.8157	-759.2949
231.95	-12.0964	512.6456	-781.6513
231.65	-13.0027	534.3166	-797.7478

\*\*\*\*\*  
Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 7.961  
\*\*\*\*\*

\*\*\*\*\*  
Program POST jmeno ulohy : UPOL2 ctvrtek 11. 2.2021 14:49:18  
\*\*\*\*\*  
UPOL\_REZ 2  
\*\*\*\*\*  
Zatezovací stav c. 2 kota dna jamy = 239.15 m pridana kotva c. 1  
\*\*\*\*\*

D E F O R M A C E			
kota [m]	u [m]	v [m]	fi [rad]
240.00	0.00170044	-0.00003711	0.00000000
239.70	0.00138532	-0.00003711	0.00105076
239.50	0.00117505	-0.00003711	0.00105213
239.15	0.00080750	-0.00003638	0.00104443
239.00	0.00065153	-0.00003565	0.00103453
238.70	0.00034531	-0.00003419	0.00100487
238.40	0.00004973	-0.00003274	0.00096402
238.10	-0.00023223	-0.00003128	0.00091449
237.70	-0.00058325	-0.00002934	0.00083912
237.40	-0.00082587	-0.00002789	0.00077792
237.10	-0.00104980	-0.00002643	0.00071470
236.80	-0.00125464	-0.00002498	0.00065098
236.50	-0.00144046	-0.00002352	0.00058804
236.20	-0.00160766	-0.00002207	0.00052702
235.90	-0.00175696	-0.00002061	0.00046888
235.60	-0.00188936	-0.00001916	0.00041445
235.30	-0.00200608	-0.00001770	0.00036444
235.00	-0.00210853	-0.00001625	0.00031944
234.70	-0.00219830	-0.00001479	0.00028004
234.40	-0.00227718	-0.00001334	0.00024699
234.10	-0.00234721	-0.00001188	0.00022110
233.80	-0.00241058	-0.00001043	0.00020260
233.50	-0.00246943	-0.00000897	0.00019065
233.20	-0.00252549	-0.00000752	0.00018382
232.90	-0.00258008	-0.00000606	0.00018058
232.60	-0.00263403	-0.00000461	0.00017934
232.25	-0.00269669	-0.00000291	0.00017878
231.95	-0.00275029	-0.00000146	0.00017859
231.65	-0.00280386	0.00000000	0.00000000

\*\*\*\*\*  
V N I T R N I S I L Y

kota [m]	M [kNm]	N [kN]	T [kN]
240.00	0.0000	0.0000	-5.1893
239.70	-1.5568	0.0000	-14.0536
239.50	-4.3675	-60.0000	79.5056
239.15	23.4595	-60.0000	69.7390
239.00	33.9203	-60.0000	60.4536
238.70	52.0564	-60.0000	47.7520
238.40	66.3820	-60.0000	36.0080
238.10	77.1844	-60.0000	23.7504
237.70	86.6845	-60.0000	13.5453
237.40	90.7481	-60.0000	5.8462
237.10	92.5020	-60.0000	-0.8855
236.80	92.2364	-60.0000	-6.7323
236.50	90.2167	-60.0000	-11.7763
236.20	86.6838	-60.0000	-16.0980
235.90	81.8544	-60.0000	-19.7748
235.60	75.9220	-60.0000	-22.8796
235.30	69.0581	-60.0000	-25.4802
235.00	61.4140	-60.0000	-28.7146
234.70	52.7996	-60.0000	-32.7022
234.40	42.9890	-60.0000	-36.4058
234.10	32.0673	-60.0000	-35.0030
233.80	21.5664	-60.0000	-28.2897
233.50	13.0794	-60.0000	-21.1528
233.20	6.7336	-60.0000	-13.6122
232.90	2.6499	-60.0000	-5.6786
232.60	0.9463	-60.0000	-1.4521
232.25	0.4381	-60.0000	-1.0373
231.95	0.1269	-60.0000	-0.4229
231.65	-0.0000		

\*\*\*\*\*  
K O T V Y

kota [m]	F [kN]
239.50	120.0000

\*\*\*\*\*  
H O R N I N O V Y T L A K

kota [m]	SigmaX[kPa]	SigPj-SigAt[kPa]	SigAj-SigPt[kPa]
----------	-------------	------------------	------------------

240.00	-28.8295	-10.8496	-173.5191
239.70	-29.5477	-12.1281	-187.9932
239.50	-31.4054	-13.8062	-206.9905
239.15	-32.5554	-12.7978	-225.9878
239.00	-34.3904	-1.1451	-243.1758
238.70	-35.2824	13.4006	-262.1731
238.40	-32.6222	31.9603	-282.5416
238.10	-29.1848	62.2891	-322.8068
237.70	-24.2978	92.4070	-361.5455
237.40	-21.3863	116.0974	-384.7961
237.10	-18.6992	137.5333	-406.2582
236.80	-16.2410	158.9667	-427.7203
236.50	-14.0112	180.4006	-449.1824
236.20	-12.0048	201.8365	-470.6444
235.90	-10.2132	223.2746	-492.1065
235.60	-8.6245	244.7148	-513.5686
235.30	-7.2239	266.1571	-535.0307
235.00	-8.9844	262.0787	-515.5916
234.70	-11.0766	257.4595	-495.2069
234.40	-10.2878	277.3586	-515.4082
234.10	3.8965	357.8805	-630.8759
233.80	18.6480	441.1873	-750.2678
233.50	19.8248	466.7686	-775.7013
233.20	20.9460	492.3495	-801.1349
232.90	22.0378	517.9257	-826.5684
232.60	10.8372	502.2099	-789.5177
232.25	1.0635	489.8157	-759.2949
231.95	1.7067	512.6456	-781.6513
231.65	2.3496	534.3166	-797.7478

\*\*\*\*\*  
Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 10.772  
\*\*\*\*\*

\*\*\*\*\*  
Program POST jmeno ulohy : UPOL2 ctvrtek 11. 2.2021 14:49:18  
\*\*\*\*\*  
UPOL\_REZ 2  
\*\*\*\*\*  
Zatezovací stav c. 3 kota dna jamy = 234.40 m  
\*\*\*\*\*

D E F O R M A C E			
kota [m]	u [m]	v [m]	fi [rad]
240.00	0.00022927	-0.00004139	0.00000000
239.70	-0.00042181	-0.00004139	0.00217056
239.50	-0.00085601	-0.00004139	0.00217159
239.15	-0.00161492	-0.00004057	0.00216039
239.00	-0.00193805	-0.00003976	0.00214730
238.70	-0.00257672	-0.00003814	0.00210754
238.40	-0.00320089	-0.00003651	0.00205093
238.10	-0.00380576	-0.00003489	0.00197916
237.70	-0.00457491	-0.00003273	0.00186286
237.40	-0.00511890	-0.00003110	0.00176202
237.10	-0.00563114	-0.00002948	0.00165144
236.80	-0.00610898	-0.00002786	0.00153297
236.50	-0.00655033	-0.00002624	0.00140856
236.20	-0.00695373	-0.00002461	0.00128030
235.90	-0.00731835	-0.00002299	0.00115044
235.60	-0.00764407	-0.00002137	0.00102135
235.30	-0.00793149	-0.00001974	0.00089554
235.00	-0.00818199	-0.00001812	0.00077565
234.70	-0.00839777	-0.00001650	0.00066457
234.40	-0.00858193	-0.00001488	0.00056548
234.10	-0.00873858	-0.00001325	0.00048161
233.80	-0.00887265	-0.00001163	0.00041521
233.50	-0.00898948	-0.00001001	0.00036658
233.20	-0.00909420	-0.00000838	0.00033400
232.90	-0.00919116	-0.00000676	0.00031419
232.60	-0.00928359	-0.00000514	0.00030314
232.25	-0.00938842	-0.00000325	0.00029680
231.95	-0.00947710	-0.00000162	0.00029480
231.65	-0.00956546	0.00000000	0.00000000

\*\*\*\*\*  
V N I T R N I S I L Y

kota [m]	M [kNm]	N [kN]	T [kN]
240.00	0.0000	0.0000	-3.9977
239.70	-1.1993	0.0000	-10.4223
239.50	-3.2838	-66.9175	98.1345
239.15	31.0633	-66.9175	91.6381
239.00	44.8090	-66.9175	85.4991
238.70	70.4587	-66.9175	77.3389
238.40	93.6604	-66.9175	69.0363
238.10	114.3713	-66.9175	60.2957
237.70	138.4896	-66.9175	51.2332
237.40	153.8595	-66.9175	42.7481
237.10	166.6839	-66.9175	33.6009
236.80	176.7642	-66.9175	23.7916
236.50	183.9017	-66.9175	13.3202
236.20	187.8977	-66.9175	2.1867
235.90	188.5537	-66.9175	-9.6088
235.60	185.6711	-66.9175	-22.0665
235.30	179.0511	-66.9175	-35.1862
235.00	168.4953	-66.9175	-49.8444
234.70	153.5419	-66.9175	-66.1430
234.40	133.6990	-66.9175	-80.9246
234.10	109.4217	-66.9175	-87.7902
233.80	83.0846	-66.9175	-83.9742
233.50	57.8923	-66.9175	-71.1459
233.20	36.5486	-66.9175	-52.2067
232.90	20.8866	-66.9175	-32.4664
232.60	11.1466	-66.9175	-18.6847
232.25	4.6070	-66.9175	-11.3835
231.95	1.1919	-66.9175	-3.9731
231.65	-0.0000		

\*\*\*\*\*  
K O T V Y

kota [m]	F [kN]
239.50	133.8349

\*\*\*\*\*  
H O R N I N O V Y T L A K

kota [m]	SigmaX[kPa]	SigPj-SigAt[kPa]	SigAj-SigPt[kPa]
----------	-------------	------------------	------------------

240.00	-22.2092	-10.8496	-173.5191
239.70	-21.4156	-12.1281	-187.9932
239.50	-22.2656	-13.8062	-206.9905
239.15	-21.6545	-15.4843	-225.9878
239.00	-22.7372	-17.0025	-243.1758
238.70	-22.6671	-18.6806	-262.1731
238.40	-23.0628	-20.5984	-283.8843
238.10	-20.8109	-20.8109	-324.8134
237.70	-21.5774	-21.5774	-364.6571
237.40	-23.5698	-23.5698	-389.9000
237.10	-25.4089	-25.4089	-413.2013
236.80	-27.2480	-27.2480	-436.5025
236.50	-29.0872	-29.0872	-459.8037
236.20	-30.9263	-30.9263	-483.1049
235.90	-32.7654	-32.7654	-506.4061
235.60	-34.6046	-34.6046	-529.7073
235.30	-36.4437	-36.4437	-553.0085
235.00	-40.7171	-40.7171	-537.0313
234.70	-45.2740	-45.2740	-520.3920
234.40	-41.0599	-41.0599	-542.8104
234.10	-19.0712	-19.0712	-658.4976
233.80	10.6000	10.6000	-777.3322
233.50	35.6341	35.6341	-802.8073
233.20	52.6090	60.7773	-828.2408
232.90	54.8341	85.9987	-853.6744
232.60	35.3377	102.5557	-817.9221
232.25	18.7211	117.4344	-788.8121
231.95	20.5843	139.7893	-811.1685
231.65	22.0729	160.9182	-827.2650

\*\*\*\*\*  
Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 1.609  
\*\*\*\*\*

*****		
MAX .	M O M E N T Y	Z E V S E C H Z A T . S T A V U
-----		
kota [m]	Mmin [kNm]	Mmax [kNm]
-----		
240.00	0.0000	0.0000
239.70	-1.5568	-0.5859
239.50	-4.3675	-1.7042
239.15	-5.2558	31.0633
239.00	-7.3538	44.8090
238.70	-11.6425	70.4587
238.40	-15.7585	93.6604
238.10	-19.6376	114.3713
237.70	-23.6717	138.4896
237.40	-25.4375	153.8595
237.10	-26.1723	166.6839
236.80	-26.0510	176.7642
236.50	-25.2416	183.9017
236.20	-23.9052	187.8977
235.90	-22.1960	188.5537
235.60	-20.2620	185.6711
235.30	-18.2451	179.0511
235.00	-16.2818	168.4953
234.70	-14.8651	153.5419
234.40	-14.4625	133.6990
234.10	-15.1768	109.4217
233.80	-15.7413	83.0846
233.50	-14.9821	57.8923
233.20	-13.0843	36.5486
232.90	-10.2265	20.8866
232.60	-6.5811	11.1466
232.25	-2.7107	4.6070
231.95	-0.7021	1.1919
231.65	-0.0000	-0.0000
*****		

```
*****
Program POST      jmeno ulohy :  UPOL5      ctvrtek 11. 2.2021  14:50:22
*****
UPOL_REZ 3
*****
Vrchol zdi = 240. m
Pata zdi = 231. m
Sirka pasu zdi = 0.9 m
-----
1. cast zdi je od koty 240.m do koty 239.6 m
E zdi = 28000000. kPa
I zdi = 0.00429 m^4
A zdi = 0.42 m^2
-----
2. cast zdi je od koty 239.6m do koty 239. m
E zdi = 28000000. kPa
I zdi = 0.0155 m^4
A zdi = 1.02 m^2
-----
3. cast zdi je od koty 239.m do koty 231. m
E zdi = 28000000. kPa
I zdi = 0.01553 m^4
A zdi = 0.4418 m^2
*****
P I L O T O V A      S T E N A
-----
Prumer piloty = 0.750 m
Osova vzdalenost pilot = 0.900 m
*****
Pata zdi je kloub s <-- posunem
*****
G E O L O G I E
-----
Geologie
-----
      koty[m]      gama[kN/m^3]      fi[st]      c[kPa]      k[kN/m^3]      delta[st]
-----
240.00 -238.10      18.50      25.00      3.00      4500.00      16.70
238.10 -235.00      18.50      26.00      5.00      6000.00      17.33
235.00 -234.10      20.50      24.00      4.00      5000.00      16.00
234.10 -232.60      18.50      28.00      3.00      10000.00      18.70
232.60 -231.00      18.50      26.00      5.00      6000.00      17.33
*****
Redukcni koeficient pro aktivni tlak ze strany terenu Kma = 1.000
-----
Redukcni koeficient pro pasivni tlak ze strany jamy Kr = 1.000
*****
Podzemni voda od koty 231. m do koty 231. m
*****
K O T V Y
-----
kota [m]      sklon [st]      delka [m]      E [kPa]      A [m^2]      sila [kN]
-----
238.20      30.00      11.00      210000000.0      0.0003000      100.00
*****
kota [m]      pritizeni [kN/m^2]
-----
240.00      40.000
*****
Min. pocet dilku zdi = 30
*****
P O P I S      Z A T E Z O V A C I C H      S T A V U
-----
      Zatezovací stav c. 1
kota dna jamy = 237.90 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.00 m
-----
      Zatezovací stav c. 2
kota dna jamy = 237.90 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.00 m      pridana kotva c. 1
-----
      Zatezovací stav c. 3
kota dna jamy = 234.83 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.00 m
-----
      Zatezovací stav c. 4
kota dna jamy = 236.65 m      pritizeni dna jamy = 0.00 kN/m^2
kota vody ze strany jamy = 231.00 m      zrusena kotva c. 1
*****
```

\*\*\*\*\*  
Program POST jmeno ulohy : UPOL5 ctvrtek 11. 2.2021 14:50:23  
\*\*\*\*\*  
UPOL\_REZ 3  
\*\*\*\*\*  
Zatezovací stav c. 1 kota dna jamy = 237.90 m  
\*\*\*\*\*  
D E F O R M A C E  
-----  
kota [m] u [m] v [m] fi [rad]  
-----  
240.00 -0.01058170 -0.00000000 0.00000000  
239.60 -0.01003783 -0.00000000 -0.00135880  
239.30 -0.00963033 -0.00000000 -0.00135763  
239.00 -0.00922341 -0.00000000 -0.00135480  
238.80 -0.00895275 -0.00000000 -0.00135160  
238.50 -0.00854832 -0.00000000 -0.00134399  
238.20 -0.00814678 -0.00000000 -0.00133214  
238.10 -0.00801381 -0.00000000 -0.00132707  
237.90 -0.00774957 -0.00000000 -0.00131494  
237.55 -0.00729399 -0.00000000 -0.00128688  
237.25 -0.00691237 -0.00000000 -0.00125638  
236.95 -0.00654063 -0.00000000 -0.00122114  
236.65 -0.00618005 -0.00000000 -0.00118221  
236.50 -0.00600426 -0.00000000 -0.00116164  
236.20 -0.00566211 -0.00000000 -0.00111902  
235.90 -0.00533297 -0.00000000 -0.00107511  
235.60 -0.00501709 -0.00000000 -0.00103079  
235.30 -0.00471445 -0.00000000 -0.00098693  
235.00 -0.00442481 -0.00000000 -0.00094428  
234.83 -0.00426628 -0.00000000 -0.00092083  
234.50 -0.00396973 -0.00000000 -0.00087681  
234.10 -0.00362932 -0.00000000 -0.00082556  
233.80 -0.00338723 -0.00000000 -0.00078863  
233.50 -0.00315591 -0.00000000 -0.00075397  
233.20 -0.00293448 -0.00000000 -0.00072292  
232.90 -0.00272170 -0.00000000 -0.00069652  
232.60 -0.00251602 -0.00000000 -0.00067561  
232.20 -0.00224992 -0.00000000 -0.00065656  
231.90 -0.00205432 -0.00000000 -0.00064818  
231.60 -0.00186062 -0.00000000 -0.00064367  
231.30 -0.00166784 -0.00000000 -0.00064188  
231.00 -0.00147535 0.00000000 0.00000000  
\*\*\*\*\*

V N I T R N I S I L Y  
-----  
kota [m] M [kNm] N [kN] T [kN]  
-----  
240.00 0.0000 0.0000 -1.9817  
239.60 -0.7927 0.0000 -6.0034  
239.30 -2.5937 -0.0000 -10.0116  
239.00 -5.5972 -0.0000 -13.7473  
238.80 -8.3466 -0.0000 -17.8425  
238.50 -13.6994 -0.0000 -23.2315  
238.20 -20.6688 -0.0000 -27.1118  
238.10 -23.3800 -0.0000 -29.8805  
237.90 -29.3561 -0.0000 -31.4927  
237.55 -40.3786 -0.0000 -25.5096  
237.25 -48.0315 -0.0000 -20.3136  
236.95 -54.1255 -0.0000 -15.3747  
236.65 -58.7379 -0.0000 -11.8823  
236.50 -60.5203 -0.0000 -8.4093  
236.20 -63.0431 -0.0000 -4.0311  
235.90 -64.2524 -0.0000 0.1589  
235.60 -64.2048 -0.0000 4.1823  
235.30 -62.9501 -0.0000 7.5003  
235.00 -60.7000 -0.0000 8.4965  
234.83 -59.2556 -0.0000 7.5704  
234.50 -56.7573 -0.0000 5.2441  
234.10 -54.6597 -0.0000 7.5085  
233.80 -52.4071 -0.0000 14.5049  
233.50 -48.0557 -0.0000 20.2521  
233.20 -41.9800 -0.0000 24.8036  
232.90 -34.5389 -0.0000 28.2061  
232.60 -26.0771 -0.0000 26.8154  
232.20 -15.3510 -0.0000 21.3705  
231.90 -8.9398 -0.0000 16.0697  
231.60 -4.1189 -0.0000 10.1413  
231.30 -1.0765 -0.0000 3.5883  
231.00 -0.0000  
\*\*\*\*\*

K O T V Y  
-----  
kota [m] F [kN]

-----  
238.20 0.0000  
\*\*\*\*\*  
H O R N I N O V Y T L A K  
-----  
kota [m] SigmaX[kPa] SigPj-SigAt[kPa] SigAj-SigPt[kPa]  
-----  
240.00 -11.0094 -11.0094 -175.3283  
239.60 -12.7674 -12.7674 -195.2303  
239.30 -14.8450 -14.8450 -218.7507  
239.00 -16.6030 -16.6030 -238.6527  
238.80 -18.2012 -18.2012 -256.7453  
238.50 -19.9592 -19.9592 -276.6472  
238.20 -21.5573 -21.5573 -294.7399  
238.10 -20.5088 -20.5088 -327.5381  
237.90 -6.5140 -6.5140 -353.9773  
237.55 20.4551 20.4551 -377.2786  
237.25 19.2445 43.0992 -401.5506  
236.95 18.2920 64.6838 -424.5222  
236.65 17.2467 83.2879 -443.4316  
236.50 17.1503 99.8847 -459.5282  
236.20 16.2156 118.4668 -478.3075  
235.90 15.5187 139.9544 -499.7696  
235.60 14.9013 161.4356 -521.2316  
235.30 12.2890 182.9126 -542.6937  
235.00 4.7101 187.5852 -532.5357  
234.83 -4.1160 179.5719 -497.4830  
234.50 -7.0815 200.0692 -518.1894  
234.10 7.1886 264.7414 -623.3626  
233.80 25.9124 344.8800 -757.3048  
233.50 21.2861 370.3604 -782.7384  
233.20 16.8575 395.8369 -808.1719  
232.90 12.6017 421.3090 -833.6055  
232.60 -4.4148 411.7982 -793.9872  
232.20 -17.2854 409.8173 -769.6407  
231.90 -19.6326 433.1931 -792.8913  
231.60 -21.9570 454.6672 -814.3534  
231.30 -24.2703 476.1381 -835.8155  
231.00 -26.5802 493.0832 -851.9120  
\*\*\*\*\*  
Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 6.246  
\*\*\*\*\*

VNITRNI		SILY	
kota [m]	M [kNm]	N [kN]	T [kN]
240.00	0.0000	0.0000	-3.0279
239.60	-1.2112	0.0000	-9.0810
239.30	-3.9355	-0.0000	-15.0959
239.00	-8.4642	-0.0000	-20.6760
238.80	-12.5994	-0.0000	-26.7940
238.50	-20.6376	-0.0000	-34.8122
238.20	-31.0813	-50.0000	46.0452
238.10	-26.4768	-50.0000	41.9920
237.90	-18.0784	-50.0000	36.1665
237.55	-5.4201	-50.0000	29.9011
237.25	3.5502	-50.0000	24.2112
236.95	10.8136	-50.0000	18.8792
236.65	16.4774	-50.0000	15.1433
236.50	18.7489	-50.0000	11.5361
236.20	22.2097	-50.0000	7.0598
235.90	24.3276	-50.0000	2.9021
235.60	25.1983	-50.0000	-0.9532
235.30	24.9123	-50.0000	-4.5227
235.00	23.5555	-50.0000	-7.7077
234.83	22.2452	-50.0000	-12.1207
234.50	18.2454	-50.0000	-18.2907
234.10	10.9291	-50.0000	-19.3334
233.80	5.1291	-50.0000	-14.6294
233.50	0.7402	-50.0000	-9.5624
233.20	-2.1285	-50.0000	-4.1337
232.90	-3.3686	-50.0000	1.6589
232.60	-2.8709	-50.0000	3.7494
232.20	-1.3712	-50.0000	2.3641
231.90	-0.6619	-50.0000	1.4003
231.60	-0.2418	-50.0000	0.6607
231.30	-0.0436	-50.0000	0.1454
231.00	-0.0000		

K O T V Y

---

kota [m]      F [kN]

238.20		100.0000	
*****			
H O R N I N O V Y		T L A K	
kota [m]	SigmaX[kPa]	SigPj-SigAt[kPa]	SigAj-SigPt[kPa]
240.00	-16.8217	-11.0094	-175.3283
239.60	-19.2160	-12.7674	-195.2303
239.30	-22.2774	-14.8450	-218.7507
239.00	-24.8007	-16.6030	-238.6527
238.80	-27.1908	-18.2012	-256.7453
238.50	-29.6973	-19.9592	-276.6472
238.20	-31.9171	-21.5573	-294.7399
238.10	-30.0240	-20.5088	-327.5381
237.90	-23.5375	-6.5140	-353.9773
237.55	-21.4200	20.4551	-377.2786
237.25	-21.0737	43.8992	-401.5506
236.95	-19.7481	64.6838	-424.5222
236.65	-18.4488	83.2879	-443.4316
236.50	-17.8135	99.8847	-459.5282
236.20	-16.5789	118.4668	-478.3075
235.90	-15.3989	139.9544	-499.7696
235.60	-14.2787	161.4356	-521.2316
235.30	-13.2207	182.9126	-542.6937
235.00	-15.0590	187.5852	-532.5357
234.83	-19.6130	179.5719	-497.4830
234.50	-18.7825	200.0692	-518.1894
234.10	-3.3101	264.7414	-623.3626
233.80	-17.4224	344.8800	-757.3048
233.50	-18.7664	370.3604	-782.7384
233.20	20.1064	395.8369	-808.1719
232.90	21.4540	421.3090	-833.6055
232.60	6.6367	411.7982	-793.9872
232.20	-4.3979	409.8173	-769.6407
231.90	-3.5695	433.1931	-792.8913
231.60	-2.7393	454.6672	-814.3534
231.30	-1.9084	476.1381	-835.8155
231.00	-1.0773	493.0832	-851.9120

Bezpečnost paty zdi proti dosazenji plnega pasivniho tlaku je 8.270  
\*\*\*\*\*

\*\*\*\*\*  
Program POST jmeno ulohy : UPOL5 ctvrtek 11. 2.2021 14:50:23  
\*\*\*\*\*  
UPOL\_REZ 3  
\*\*\*\*\*  
Zatezovací stav c. 3 kota dna jamy = 234.83 m  
\*\*\*\*\*  
D E F O R M A C E  
-----  
kota [m] u [m] v [m] fi [rad]  
-----  
240.00 -0.00197339 -0.00003162 0.00000000  
239.60 -0.00227290 -0.00003162 0.00074979  
239.30 -0.00249800 -0.00003162 0.00075111  
239.00 -0.00272376 -0.00003162 0.00075429  
238.80 -0.00287495 -0.00003162 0.00075789  
238.50 -0.00310349 -0.00003162 0.00076641  
238.20 -0.00333528 -0.00003162 0.00077970  
238.10 -0.00341349 -0.00003118 0.00078430  
237.90 -0.00357094 -0.00003030 0.00078922  
237.55 -0.00384690 -0.00002877 0.00078507  
237.25 -0.00408036 -0.00002745 0.00076968  
236.95 -0.00430776 -0.00002613 0.00074479  
236.65 -0.00452643 -0.00002481 0.00071182  
236.50 -0.00463179 -0.00002415 0.00069273  
236.20 -0.00483340 -0.00002284 0.00065052  
235.90 -0.00502169 -0.00002152 0.00060423  
235.60 -0.00519571 -0.00002020 0.00055564  
235.30 -0.00535504 -0.00001888 0.00050663  
235.00 -0.00549985 -0.00001757 0.00045919  
234.83 -0.00557573 -0.00001682 0.00043374  
234.50 -0.00571134 -0.00001537 0.00038939  
234.10 -0.00585815 -0.00001361 0.00034697  
233.80 -0.00595863 -0.00001230 0.00032414  
233.50 -0.00605334 -0.00001098 0.00030834  
233.20 -0.00614420 -0.00000966 0.00029821  
232.90 -0.00623268 -0.00000834 0.00029225  
232.60 -0.00631980 -0.00000703 0.00028884  
232.20 -0.00643474 -0.00000527 0.00028606  
231.90 -0.00652035 -0.00000395 0.00028473  
231.60 -0.00660564 -0.00000263 0.00028398  
231.30 -0.00669078 -0.00000132 0.00028366  
231.00 -0.00677586 0.00000000 0.00000000  
\*\*\*\*\*

V N I T R N I S I L Y  
-----  
kota [m] M [kNm] N [kN] T [kN]  
-----  
240.00 0.0000 0.0000 -2.2616  
239.60 -0.9046 0.0000 -6.7200  
239.30 -2.9206 -0.0000 -11.2054  
239.00 -6.2823 -0.0000 -15.3755  
238.80 -9.3574 -0.0000 -19.9934  
238.50 -15.3554 -0.0000 -26.0503  
238.20 -23.1705 -54.3263 63.7147  
238.10 -16.7990 -54.3263 60.9460  
237.90 -4.6098 -54.3263 55.8142  
237.55 14.9252 -54.3263 49.2115  
237.25 29.6886 -54.3263 42.5993  
236.95 42.4684 -54.3263 35.4907  
236.65 53.1156 -54.3263 29.8333  
236.50 57.5906 -54.3263 23.8966  
236.20 64.7596 -54.3263 15.5465  
235.90 69.4235 -54.3263 6.6998  
235.60 71.4335 -54.3263 -2.6434  
235.30 70.6404 -54.3263 -12.4832  
235.00 66.8955 -54.3263 -21.0324  
234.83 63.3200 -54.3263 -29.5827  
234.50 53.5577 -54.3263 -37.2270  
234.10 38.6669 -54.3263 -37.1489  
233.80 27.5222 -54.3263 -30.8258  
233.50 18.2745 -54.3263 -23.9080  
233.20 11.1021 -54.3263 -16.4059  
232.90 6.1803 -54.3263 -8.3259  
232.60 3.6825 -54.3263 -3.2764  
232.20 2.3720 -54.3263 -3.0106  
231.90 1.4688 -54.3263 -2.5054  
231.60 0.7171 -54.3263 -1.7239  
231.30 0.2000 -54.3263 -0.6665  
231.00 -0.0000  
\*\*\*\*\*

K O T V Y  
-----  
kota [m] F [kN]

-----  
238.20 108.6526  
\*\*\*\*\*  
H O R N I N O V Y T L A K  
-----  
kota [m] SigmaX[kPa] SigPj-SigAt[kPa] SigAj-SigPt[kPa]  
-----  
240.00 -12.5643 -11.0094 -175.3283  
239.60 -14.1539 -12.7674 -195.2303  
239.30 -16.6124 -14.8450 -218.7507  
239.00 -18.5340 -16.6030 -238.6527  
238.80 -20.5240 -18.2012 -256.7453  
238.50 -22.4330 -19.9592 -276.6472  
238.20 -24.0603 -21.5573 -294.7399  
238.10 -20.5088 -20.5088 -327.5381  
237.90 -20.7345 -20.7345 -353.9773  
237.55 -22.5736 -22.5736 -377.2786  
237.25 -24.4893 -24.4893 -401.5506  
236.95 -26.3285 -26.3285 -424.8519  
236.65 -27.9377 -27.9377 -445.2404  
236.50 -29.3171 -29.3171 -462.7163  
236.20 -30.9263 -30.9263 -483.1049  
235.90 -32.7654 -32.7654 -506.4061  
235.60 -34.6046 -34.6046 -529.7073  
235.30 -36.4437 -36.4437 -553.0085  
235.00 -40.4215 -39.8298 -545.4058  
234.83 -38.0014 -32.9817 -513.6665  
234.50 -23.2703 -8.9941 -536.6453  
234.10 0.2479 25.5951 -642.5532  
233.80 23.4188 65.5996 -774.6913  
233.50 25.6215 91.2299 -800.1248  
233.20 27.7856 116.7701 -825.5584  
232.90 29.9260 142.2692 -850.9919  
232.60 16.0301 155.1974 -812.2575  
232.20 0.8438 170.0015 -788.5738  
231.90 1.8710 193.3345 -811.8244  
231.60 2.8946 214.7880 -833.2865  
231.30 3.9162 236.2439 -854.7486  
231.00 4.9372 253.1954 -870.8451  
\*\*\*\*\*  
Bezpecnost paty zdi proti dosazeni plneho pasivniho tlaku je 2.969  
\*\*\*\*\*

V N I T R N I S I L Y			
kota [m]	M [kNm]	N [kN]	T [kN]
240.00	0.0000	0.0000	-1.9817
239.60	-0.7927	-0.0000	-6.0034
239.30	-2.5937	0.0000	-10.0116
239.00	-5.5972	-0.0000	-13.7473
238.80	-8.3466	-0.0000	-17.8425
238.50	-13.6994	-0.0000	-23.2315
238.20	-20.6688	-0.0000	-27.1118
238.10	-23.3800	-0.0000	-29.8805
237.90	-29.3561	-0.0000	-35.0123
237.55	-41.6104	-0.0000	-41.6151
237.25	-54.0949	-0.0000	-48.2272
236.95	-68.5631	-0.0000	-55.3359
236.65	-85.1639	-0.0000	-59.7033
236.50	-94.1194	-0.0000	-59.3985
236.20	-111.9389	-0.0000	-53.7359
235.90	-128.0597	-0.0000	-42.2229
235.60	-140.7266	-0.0000	-26.0045
235.30	-148.5279	-0.0000	-11.5116
235.00	-151.9814	-0.0000	-2.6583
234.83	-152.4333	-0.0000	4.0591
234.50	-151.0938	-0.0000	12.1864
234.10	-146.2192	-0.0000	24.5677
233.80	-138.8489	-0.0000	39.9402
233.50	-126.8669	-0.0000	52.6952
233.20	-111.0583	-0.0000	62.9034
232.90	-92.1873	-0.0000	70.6264
232.60	-70.9994	-0.0000	68.9020
232.20	-43.4386	-0.0000	58.1265
231.90	-26.0006	-0.0000	45.6530
231.60	-12.3047	-0.0000	29.9599
231.30	-3.3168	-0.0000	11.0559
231.00	-0.0000		

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MAX .	M O M E N T Y	Z E	V S E C H	Z A T .	S T A V U
-----					
kota [m]	Mmin [kNm]	Mmax [kNm]			
-----					
240.00	0.0000	0.0000			
239.60	-1.2112	-0.7927			
239.30	-3.9355	-2.5937			
239.00	-8.4642	-5.5972			
238.80	-12.5994	-8.3466			
238.50	-20.6376	-13.6994			
238.20	-31.0813	-20.6688			
238.10	-26.4768	-16.7990			
237.90	-29.3561	-4.6098			
237.55	-41.6104	14.9252			
237.25	-54.0949	29.6886			
236.95	-68.5631	42.4684			
236.65	-85.1639	53.1156			
236.50	-94.1194	57.5906			
236.20	-111.9389	64.7596			
235.90	-128.0597	69.4235			
235.60	-140.7266	71.4335			
235.30	-148.5279	70.6404			
235.00	-151.9814	66.8955			
234.83	-152.4333	63.3200			
234.50	-151.0938	53.5577			
234.10	-146.2192	38.6669			
233.80	-138.8489	27.5222			
233.50	-126.8669	18.2745			
233.20	-111.0583	11.1021			
232.90	-92.1873	6.1803			
232.60	-70.9994	3.6825			
232.20	-43.4386	2.3720			
231.90	-26.0006	1.4688			
231.60	-12.3047	0.7171			
231.30	-3.3168	0.2000			
231.00	-0.0000	-0.0000			

\*\*\*\*\*

## STATICKÝ VÝPOČET KOTVY

AKCE: **UPOL-KOTVA DOČASNÁ**  
 AUTOR: ČENĚK A JEŽEK - Budina  
 KOTEVNÍ SÍLA: **200** kN PŘEDPÍNACÍ KOEF.: **1,3** - PŘEDPÍNACÍ SÍLA: **260** kN  
 TYP KOTVY: **DOČASNÁ**

### 1) (VNĚJŠÍ) ÚNOSNOST KOŘENE KOTVY $N_{ue}$

$$F_d < N_{ue} = (F_{m1} \cdot L_{kk}) / S_b$$

kde:  $N_{ue}$  - vnější únosnost kořene kotvy (kN)  $F_d$  - maximální předpínací síla ( $= y_n \cdot F_k$ )  
 $F_{m1}$  - únosnost kořene kotvy (kN/m)  $y_n$  - předpínací koeficient (1,25-1,4)  
 $L_{kk}$  - navrhovaná délka kořene (m)  $f_k$  - kotevní síla dle statického návrhu (kN)  
 $S_b$  - součinitel bezpečnosti = 1,60

#### DOPORUČENÉ PARAMETRY INJEKTÁŽE A ÚDAJE DLE IS/5-1986

Znak	Druh základové půdy	Typické vlastnosti	počet inj.	Konečný inj. Tlak (MPa)	Plášťové tření $T_i$ (MPa)	Fm1 kořene (kN/m)		VÝPOČET
						injektovatelný	neinjektovatelný	
1	Skalni horniny R1-R4	$\sigma_f > 50$ MPa	0	-	1,0-1,6	350 - 500	350 - 500	350
2	Poloskalní horniny R5-R6	$\sigma_f < 50$ MPa	0-1	0,5-3,0	0,3-1,0	200 - 400	100 - 400	200
3	Štěrky injekt.	$35^\circ < \varphi < 45^\circ$ , $c=0$	1-2	1,0-2,0	0,25-0,32	200 - 400	70 - 200	250
4	Štěrky neinjekt.	podle druhu výplně	1-2	2,0-4,0	0,23	200 - 250	50 - 100	200
5	Pisky	$25^\circ < \varphi < 35^\circ$ , $c=0$	2-3	1,5-4,0	0,15-0,18	110 - 200	20 - 60	150
6	Soudrž. Zeminy tvrdé	$10^\circ < \varphi_u < 30^\circ$ , $c > 0,1$ MPa	1-3	1,5-3,0	0,13-0,19	80 - 170	30 - 80	150
7	Soudrž. Zeminy pevné až tuhé	$\varphi_u < 10^\circ$ , $0,05 < c < 0,1$ 5 MPa	2-3	1,0-2,5	0,10-0,13	70 - 150	15 - 40	100
8	Soudrž. Zeminy měkké	$\varphi_u = 0^\circ$ , $0,025 < c < 0,0$ 5 MPa	3-(4)	0,5-2,0	0,05-0,07	40 - 100	10	70

### VÝPOČET $N_{ue}$

Výpočet je uvažován pro maximálně 5 druhů základové půdy:

Členění	Název	Znak	Kořen(i) (m)	$N_{ue}(i)$
<div style="display: flex; align-items: center;"> <div style="text-align: center; margin-right: 10px;">                         svrchní základová půda  </div> <div>                         spodní základová půda                     </div> </div>	F4	7	5,0	312,5
				0,0
				0,0
				0,0
				0,0

Navrhovaná délka kořene  $L_{kk}$

$L_{kk} = 5,0$  m

### VNĚJŠÍ ÚNOSNOST KOŘENE KOTVY $N_{ue}$

$N_{ue} = 312,5$  kN

**VYHOVUJE**

### 2) (VNITŘNÍ) ÚNOSNOST KOTVY - POČET LAN

$$F_d < n \cdot \text{typ oc. lana}$$

kde:  $F_d$  - maximální předpínací síla ( $= y_n \cdot F_k$ )  
 $n$  - počet lan (ks)  
 $f_k$  - kotevní síla dle statického návrhu (kN)  
 $y_n$  - předpínací koeficient (1,25-1,4)

Pro návrh kotvy jsou nejčastěji používány tyto ocelová lana s únosností:

15,5/1620  
 15,5/1800  
 15,7/1770

### VÝPOČET

Pro návrh kotvy volím oc. lana :

**15,7/1770**

volím počet lan: **2** ks (min.2ks)

Typ lana	únosnost 1 ks lana (kN)	Plocha 1 ks lana (mm <sup>2</sup> )
15,7/1770	142	150

### (VNITŘNÍ) ÚNOSNOST KOTVY

$N_{ui} = 284,0$  kN

**VYHOVUJE**

Pozn1: Výpočet  $N_{ue}$  vychází z metodiky uveřejněné v časopise Inženýrské stavby (05/1986) z výsledků zatěžovacích zkoušek v různých zemínách a horninách.

# STATICKÝ VÝPOČET KOTVY

AKCE: UPOL-KOTVA TRVALÁ

AUTOR: ČENĚK A JEŽEK - Budina

KOTEVNÍ SÍLA: 240 kN PŘEDPÍNACÍ KOEF.: 1,3 - PŘEDPÍNACÍ SÍLA: 312 kN

TYP KOTVY: DOČASNÁ

## 1) (VNĚJŠÍ) ÚNOSNOST KOŘENE KOTVY Nue

$$F_d < N_{ue} = (F_{m1} \cdot L_{kk}) / S_b$$

kde: Nue - vnější únosnost kořene kotvy (kN) Fd - maximální předpínací síla (= yn \* Fk)  
Fm1 - únosnost kořene kotvy (kN/m) yn - předpínací koeficient (1,25-1,4)  
Lkk - navrhovaná délka kořene (m) fk - kotevní síla dle statického návrhu (kN)  
Sb - součinitel bezpečnosti = 1,60

### DOPORUČENÉ PARAMETRY INJEKTÁŽE A ÚDAJE DLE IS/5-1986

Znak	Druh základové půdy	Typické vlastnosti	počet inj.	Konečný inj. Tlak (MPa)	Plášťové tření Ti (MPa)	Fm1 kořene (kN/m)		
						injektovatelný	neinjektovatelný	VÝPOČET
1	Skalni horniny R1-R4	$\sigma_f > 50$ MPa	0	-	1,0-1,6	350 - 500	350 - 500	350
2	Poloskalní horniny R5-R6	$\sigma_f < 50$ MPa	0-1	0,5-3,0	0,3-1,0	200 - 400	100 - 400	200
3	Štěrky injekt.	$35^\circ < \varphi < 45^\circ$ , c=0	1-2	1,0-2,0	0,25-0,32	200 - 400	70 - 200	250
4	Štěrky neinjekt.	podle druhu výplně	1-2	2,0-4,0	0,23	200 - 250	50 - 100	200
5	Pisky	$25^\circ < \varphi < 35^\circ$ , c=0	2-3	1,5-4,0	0,15-0,18	110 - 200	20 - 60	150
6	Soudrž. Zeminy tvrdé	$10^\circ < \varphi_u < 30^\circ$ , c>0,1 MPa	1-3	1,5-3,0	0,13-0,19	80 - 170	30 - 80	150
7	Soudrž. Zeminy pevné až tuhé	$\varphi_u < 10^\circ$ , 0,05<c<0,1 5 MPa	2-3	1,0-2,5	0,10-0,13	70 - 150	15 - 40	100
8	Soudrž. Zeminy měkké	$\varphi_u = 0^\circ$ , 0,025<c<0,0 5 MPa	3-(4)	0,5-2,0	0,05-0,07	40 - 100	10	70

## VÝPOČET Nue

Výpočet je uvažován pro maximálně 5 druhů základové půdy:

Členění	Název	Znak	Kořen(i) (m)	Nue(i)
svrchní základová půda ↓ spodní základová půda	F4	7	5,5	343,8
				0,0
				0,0
				0,0
				0,0

Navrhovaná délka kořene Lkk

Lkk = 5,5 m

## VNĚJŠÍ ÚNOSNOST KOŘENE KOTVY Nue

Nue = 343,8 kN

VYHOVUJE

## 2) (VNITŘNÍ) ÚNOSNOST KOTVY - POČET LAN

$$F_d < n \cdot \text{typ oc. lana}$$

kde: Fd - maximální předpínací síla (= yn \* Fk)  
n - počet lan (ks)  
fk - kotevní síla dle statického návrhu (kN)  
yn - předpínací koeficient (1,25-1,4)

Pro návrh kotvy jsou nejčastěji používány tyto ocelová lana s únosností:

15,5/1620  
15,5/1800  
15,7/1770

## VÝPOČET

Pro návrh kotvy volím oc. lana :

15,7/1770 volím počet lan: 3 ks (min.2ks)

Typ lana	únosnost 1 ks lana (kN)	Plocha 1 ks lana(mm2)
15,7/1770	142	150

## (VNITŘNÍ) ÚNOSNOST KOTVY

Nui = 426,0 kN

VYHOVUJE

Pozn1: Výpočet Nue vychází z metodiky uveřejněné v časopise Inženýrské stavby (05/1986) z výsledků zatěžovacích zkoušek v různých zemínách a horninách.