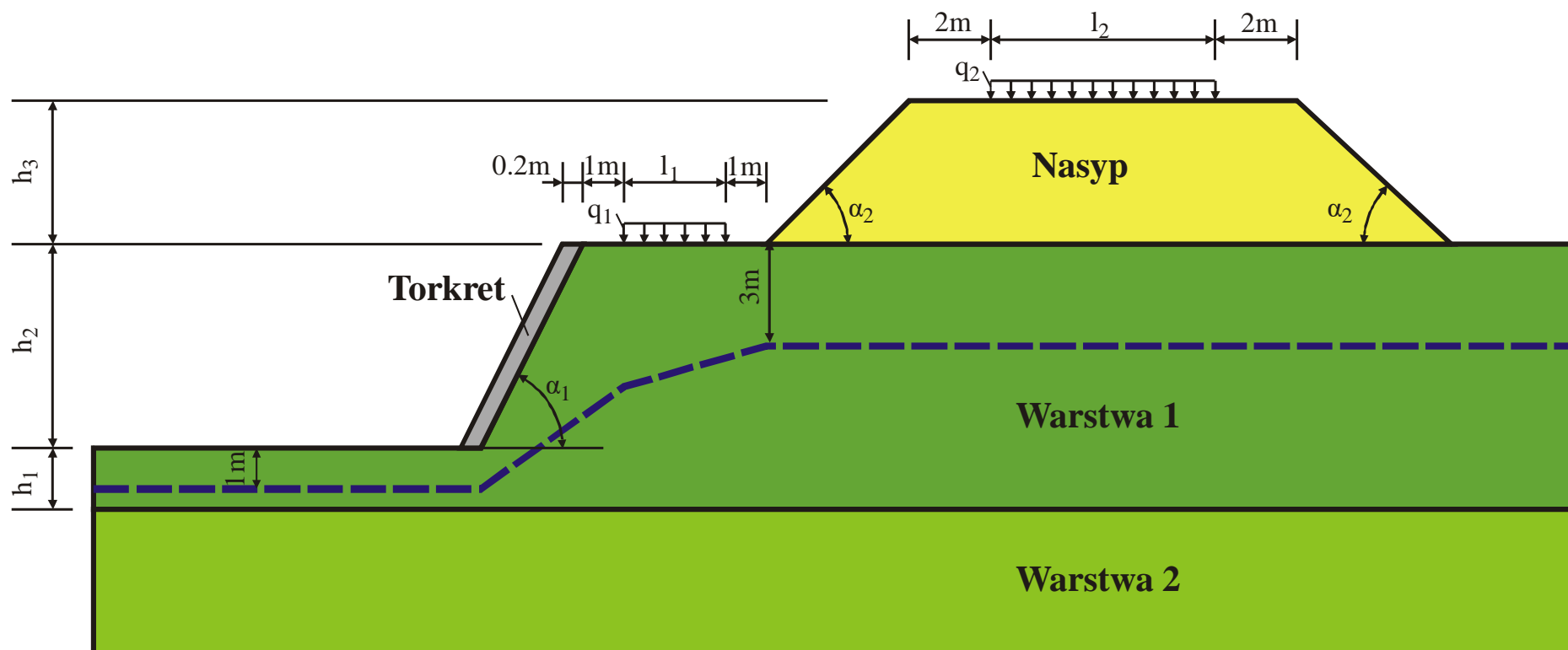


Projekt z przedmiotu

MECHANIKA GRUNTÓW

Budownictwo
II rok

Na projekt powinno składać się opracowanie zawierające wyniki analizy stateczności modelu przedstawionego na rys. 1. Analiza stateczności powinna dotyczyć skarpy górnej, skarpy dolnej oraz całego zbocza w wariantcie bez zbrojenia oraz w wariantcie uwzględniającym zbrojenie (łącznie 6 wyników). Nasyp (skarpe górną) należy zbroić geosiatkami bądź geotkaninami, natomiast skarpe dolną gwoździami bądź kotwami. Wymagane minimalne wartości wskaźników stateczności wynoszą 1.5. Obliczenia należy wykonać metodą Morgensterna-Price'a. Sposób określania powierzchni poślizgu: do wyboru Entry & Exit lub Grid & Radius. W opracowaniu należy opisać zastosowane zbrojenie. Należy również sporządzić rysunek techniczny przedstawiający geometrię modelu wraz z wymiarami oraz opisem zastosowanego zbrojenia. Do wyników należy załączyć pliki źródłowe.



Rys. 1. Geometria modelu.

Warstwa 2			Torkret		
γ_{sat} [kN/m ³]	φ [°]	c [kPa]	γ [kN/m ³]	φ [°]	c [kPa]
24	20	35	25	35	800

Nr tematu	h ₁ [m]	h ₂ [m]	h ₃ [m]	l ₁ [m]	l ₂ [m]	α ₁ [°]	α ₂ [°]	q ₁ [kPa]	q ₂ [kPa]	Nasyp			Warstwa 1			
										γ _d [kN/m ³]	φ [°]	c [kPa]	γ _d [kN/m ³]	φ [°]	c [kPa]	n [%]
275536	1.5	5.0	7.2	5.4	21.0	90	45	18	29	20	26	5	17.4	14	13	34
286749	1.6	5.2	7.0	5.8	22.0	85	50	18	32	20	27	6	17.7	15	13	33
291744	1.7	5.4	6.8	6.2	23.0	80	55	17	20	20	28	7	18.0	15	14	32
291747	1.8	5.6	6.6	6.6	24.0	90	60	17	23	20	29	8	18.3	16	14	31
291782	1.9	5.8	6.4	7.0	25.0	85	45	16	26	20	22	5	18.7	17	15	30
291807	2.0	6.0	6.2	7.4	26.0	80	50	16	29	20	23	6	19.0	18	15	28
291823	2.1	6.2	6.0	7.8	27.0	90	55	16	32	20	24	7	19.3	19	16	27
291830	2.2	6.4	5.8	5.0	28.0	85	60	15	20	20	25	8	19.6	13	16	26
291861	2.3	6.6	8.0	5.4	29.0	80	45	15	23	20	30	5	18.7	14	17	30
291865	2.4	6.8	7.8	5.8	20.0	90	50	14	26	20	31	6	19.0	15	17	28
291868	2.5	7.0	7.6	6.2	21.0	85	55	14	29	20	32	7	19.3	15	18	27
291871	1.5	7.2	7.4	6.6	22.0	80	60	14	32	20	33	8	19.6	16	18	26
291877	1.6	7.4	7.2	7.0	23.0	90	45	13	20	20	26	5	19.9	17	19	25
291916	1.7	7.6	7.0	7.4	24.0	85	50	13	23	20	27	6	20.2	18	19	24
293082	1.8	7.8	6.8	7.8	25.0	80	55	12	26	20	28	7	20.6	19	20	22
298569	1.9	8.0	6.6	5.0	26.0	90	60	12	29	20	29	8	20.9	13	20	21
298570	2.0	8.2	6.4	5.4	27.0	85	45	12	32	20	22	5	21.2	14	21	20
298571	2.1	8.4	6.2	5.8	28.0	80	50	11	20	20	23	6	21.5	15	21	19
298572	2.2	5.0	6.0	6.2	29.0	90	55	18	23	20	24	7	18.0	15	13	32
298574	2.3	5.2	5.8	6.6	20.0	85	60	18	26	20	25	8	18.3	16	13	31
298576	2.4	5.4	8.0	7.0	21.0	80	45	17	29	20	30	5	17.4	17	14	34
298577	2.5	5.6	7.8	7.4	22.0	90	50	17	32	20	31	6	17.7	18	14	33
298579	1.5	5.8	7.6	7.8	23.0	85	55	16	20	20	32	7	18.0	19	15	32
298580	1.6	6.0	7.4	5.0	24.0	80	60	16	23	20	33	8	18.3	13	15	31
298584	1.7	6.2	7.2	5.4	25.0	90	45	16	26	20	26	5	18.7	14	16	30
298586	1.8	6.4	7.0	5.8	26.0	85	50	15	29	20	27	6	19.0	15	16	28
298588	1.9	6.6	6.8	6.2	27.0	80	55	15	32	20	28	7	19.3	15	17	27
298591	2.0	6.8	6.6	6.6	28.0	90	60	14	20	20	29	8	19.6	16	17	26
298592	2.1	7.0	6.4	7.0	29.0	85	45	14	23	20	22	5	19.9	17	18	25
298593	2.2	7.2	6.2	7.4	20.0	80	50	14	26	20	23	6	20.2	18	18	24

Nr tematu	h ₁ [m]	h ₂ [m]	h ₃ [m]	l ₁ [m]	l ₂ [m]	α ₁ [°]	α ₂ [°]	q ₁ [kPa]	q ₂ [kPa]	Nasyp			Warstwa 1			
										γ _d [kN/m ³]	φ [°]	c [kPa]	γ _d [kN/m ³]	φ [°]	c [kPa]	n [%]
298594	2.3	7.4	6.0	7.8	21.0	90	55	13	29	20	24	7	20.6	19	19	22
298598	2.4	7.6	5.8	5.0	22.0	85	60	13	32	20	25	8	20.9	13	19	21
298604	2.5	7.8	8.0	5.4	23.0	80	45	12	20	20	30	5	19.9	14	20	25
298605	1.5	8.0	7.8	5.8	24.0	90	50	12	23	20	31	6	20.2	15	20	24
298606	1.6	8.2	7.6	6.2	25.0	85	55	12	26	20	32	7	20.6	15	21	22
298607	1.7	8.4	7.4	6.6	26.0	80	60	11	29	20	33	8	20.9	16	21	21
298608	1.8	5.0	7.2	7.0	27.0	90	45	18	32	20	26	5	17.4	17	13	34
298609	1.9	5.2	7.0	7.4	28.0	85	50	18	20	20	27	6	17.7	18	13	33
298612	2.0	5.4	6.8	7.8	29.0	80	55	17	23	20	28	7	18.0	19	14	32
298613	2.1	5.6	6.6	5.0	20.0	90	60	17	26	20	29	8	18.3	13	14	31
298614	2.2	5.8	6.4	5.4	21.0	85	45	16	29	20	22	5	18.7	14	15	30
298615	2.3	6.0	6.2	5.8	22.0	80	50	16	32	20	23	6	19.0	15	15	28
298616	2.4	6.2	6.0	6.2	23.0	90	55	16	20	20	24	7	19.3	15	16	27
298617	2.5	6.4	5.8	6.6	24.0	85	60	15	23	20	25	8	19.6	16	16	26
298618	1.5	6.6	8.0	7.0	25.0	80	45	15	26	20	30	5	18.7	17	17	30
298620	1.6	6.8	7.8	7.4	26.0	90	50	14	29	20	31	6	19.0	18	17	28
298621	1.7	7.0	7.6	7.8	27.0	85	55	14	32	20	32	7	19.3	19	18	27
298623	1.8	7.2	7.4	5.0	28.0	80	60	14	20	20	33	8	19.6	13	18	26
298624	1.9	7.4	7.2	5.4	29.0	90	45	13	23	20	26	5	19.9	14	19	25
298626	2.0	7.6	7.0	5.8	20.0	85	50	13	26	20	27	6	20.2	15	19	24
298629	2.1	7.8	6.8	6.2	21.0	80	55	12	29	20	28	7	20.6	15	20	22
298630	2.2	8.0	6.6	6.6	22.0	90	60	12	32	20	29	8	20.9	16	20	21
298633	2.3	8.2	6.4	7.0	23.0	85	45	12	20	20	22	5	21.2	17	21	20
298634	2.4	8.4	6.2	7.4	24.0	80	50	11	23	20	23	6	21.5	18	21	19
298637	2.5	5.0	6.0	7.8	25.0	90	55	18	26	20	24	7	18.0	19	13	32
298639	1.5	5.2	5.8	5.0	26.0	85	60	18	29	20	25	8	18.3	13	13	31
298643	1.6	5.4	8.0	5.4	27.0	80	45	17	32	20	30	5	17.4	14	14	34
298644	1.7	5.6	7.8	5.8	28.0	90	50	17	20	20	31	6	17.7	15	14	33
298646	1.8	5.8	7.6	6.2	29.0	85	55	16	23	20	32	7	18.0	15	15	32
298648	1.9	6.0	7.4	6.6	20.0	80	60	16	26	20	33	8	18.3	16	15	31

Nr tematu	h ₁ [m]	h ₂ [m]	h ₃ [m]	l ₁ [m]	l ₂ [m]	α ₁ [°]	α ₂ [°]	q ₁ [kPa]	q ₂ [kPa]	Nasyp			Warstwa 1			
										γ _d [kN/m ³]	φ [°]	c [kPa]	γ _d [kN/m ³]	φ [°]	c [kPa]	n [%]
298652	2.0	6.2	7.2	7.0	21.0	90	45	16	29	20	26	5	18.7	17	16	30
298653	2.1	6.4	7.0	7.4	22.0	85	50	15	32	20	27	6	19.0	18	16	28
298656	2.2	6.6	6.8	7.8	23.0	80	55	15	20	20	28	7	19.3	19	17	27
298657	2.3	6.8	6.6	5.0	24.0	90	60	14	23	20	29	8	19.6	13	17	26
298658	2.4	7.0	6.4	5.4	25.0	85	45	14	26	20	22	5	19.9	14	18	25
298660	2.5	7.2	6.2	5.8	26.0	80	50	14	29	20	23	6	20.2	15	18	24
298662	1.5	7.4	6.0	6.2	27.0	90	55	13	32	20	24	7	20.6	15	19	22
298665	1.6	7.6	5.8	6.6	28.0	85	60	13	20	20	25	8	20.9	16	19	21
298667	1.7	7.8	8.0	7.0	29.0	80	45	12	23	20	30	5	19.9	17	20	25
298668	1.8	8.0	7.8	7.4	20.0	90	50	12	26	20	31	6	20.2	18	20	24
298671	1.9	8.2	7.6	7.8	21.0	85	55	12	29	20	32	7	20.6	19	21	22
298673	2.0	8.4	7.4	5.0	22.0	80	60	11	32	20	33	8	20.9	13	21	21
298674	2.1	5.0	7.2	5.4	23.0	90	45	18	20	20	26	5	17.4	14	13	34
298676	2.2	5.2	7.0	5.8	24.0	85	50	18	23	20	27	6	17.7	15	13	33
298677	2.3	5.4	6.8	6.2	25.0	80	55	17	26	20	28	7	18.0	15	14	32
298678	2.4	5.6	6.6	6.6	26.0	90	60	17	29	20	29	8	18.3	16	14	31
298680	2.5	5.8	6.4	7.0	27.0	85	45	16	32	20	22	5	18.7	17	15	30
298681	1.5	6.0	6.2	7.4	28.0	80	50	16	20	20	23	6	19.0	18	15	28
298682	1.6	6.2	6.0	7.8	29.0	90	55	16	23	20	24	7	19.3	19	16	27
298683	1.7	6.4	5.8	5.0	20.0	85	60	15	26	20	25	8	19.6	13	16	26
298684	1.8	6.6	8.0	5.4	21.0	80	45	15	29	20	30	5	18.7	14	17	30
298686	1.9	6.8	7.8	5.8	22.0	90	50	14	32	20	31	6	19.0	15	17	28
298688	2.0	7.0	7.6	6.2	23.0	85	55	14	20	20	32	7	19.3	15	18	27
298690	2.1	7.2	7.4	6.6	24.0	80	60	14	23	20	33	8	19.6	16	18	26
298691	2.2	7.4	7.2	7.0	25.0	90	45	13	26	20	26	5	19.9	17	19	25
298692	2.3	7.6	7.0	7.4	26.0	85	50	13	29	20	27	6	20.2	18	19	24
298693	2.4	7.8	6.8	7.8	27.0	80	55	12	32	20	28	7	20.6	19	20	22
298695	2.5	8.0	6.6	5.0	28.0	90	60	12	20	20	29	8	20.9	13	20	21
298696	1.5	8.2	6.4	5.4	29.0	85	45	12	23	20	22	5	21.2	14	21	20
298697	1.6	8.4	6.2	5.8	20.0	80	50	11	26	20	23	6	21.5	15	21	19

Nr tematu	h ₁ [m]	h ₂ [m]	h ₃ [m]	l ₁ [m]	l ₂ [m]	α ₁ [°]	α ₂ [°]	q ₁ [kPa]	q ₂ [kPa]	Nasyp			Warstwa 1			
										γ _d [kN/m ³]	φ [°]	c [kPa]	γ _d [kN/m ³]	φ [°]	c [kPa]	n [%]
298699	1.7	5.0	6.0	6.2	21.0	90	55	18	29	20	24	7	18.0	15	13	32
298701	1.8	5.2	5.8	6.6	22.0	85	60	18	32	20	25	8	18.3	16	13	31
298702	1.9	5.4	8.0	7.0	23.0	80	45	17	20	20	30	5	17.4	17	14	34
298703	2.0	5.6	7.8	7.4	24.0	90	50	17	23	20	31	6	17.7	18	14	33
298704	2.1	5.8	7.6	7.8	25.0	85	55	16	26	20	32	7	18.0	19	15	32
298705	2.2	6.0	7.4	5.0	26.0	80	60	16	29	20	33	8	18.3	13	15	31
298706	2.3	6.2	7.2	5.4	27.0	90	45	16	32	20	26	5	18.7	14	16	30
298707	2.4	6.4	7.0	5.8	28.0	85	50	15	20	20	27	6	19.0	15	16	28
298710	2.5	6.6	6.8	6.2	29.0	80	55	15	23	20	28	7	19.3	15	17	27
298715	1.5	6.8	6.6	6.6	20.0	90	60	14	26	20	29	8	19.6	16	17	26
298716	1.6	7.0	6.4	7.0	21.0	85	45	14	29	20	22	5	19.9	17	18	25
298718	1.7	7.2	6.2	7.4	22.0	80	50	14	32	20	23	6	20.2	18	18	24
298719	1.8	7.4	6.0	7.8	23.0	90	55	13	20	20	24	7	20.6	19	19	22
298720	1.9	7.6	5.8	5.0	24.0	85	60	13	23	20	25	8	20.9	13	19	21
298723	2.0	7.8	8.0	5.4	25.0	80	45	12	26	20	30	5	19.9	14	20	25
298724	2.1	8.0	7.8	5.8	26.0	90	50	12	29	20	31	6	20.2	15	20	24
298727	2.2	8.2	7.6	6.2	27.0	85	55	12	32	20	32	7	20.6	15	21	22
298731	2.3	8.4	7.4	6.6	28.0	80	60	11	20	20	33	8	20.9	16	21	21
302231	2.4	5.0	7.2	7.0	29.0	90	45	18	23	20	26	5	17.4	17	13	34
1	2.5	5.2	7.0	7.4	20.0	85	50	18	26	20	27	6	17.7	18	13	33
2	1.5	5.4	6.8	7.8	21.0	80	55	17	29	20	28	7	18.0	19	14	32
3	1.6	5.6	6.6	5.0	22.0	90	60	17	32	20	29	8	18.3	13	14	31
4	1.7	5.8	6.4	5.4	23.0	85	45	16	20	20	22	5	18.7	14	15	30
5	1.8	6.0	6.2	5.8	24.0	80	50	16	23	20	23	6	19.0	15	15	28
6	1.9	6.2	6.0	6.2	25.0	90	55	16	26	45	24	7	19.3	15	16	27
7	2.0	6.4	5.8	6.6	26.0	85	60	15	29	46	25	8	19.6	16	16	26
8	2.1	6.6	8.0	7.0	27.0	80	45	15	32	47	30	5	18.7	17	17	30
9	2.2	6.8	7.8	7.4	28.0	90	50	14	20	48	31	6	19.0	18	17	28
10	2.3	7.0	7.6	7.8	29.0	85	55	14	23	49	32	7	19.3	19	18	27
11	2.4	7.2	7.4	5.0	20.0	80	60	14	26	50	33	8	19.6	13	18	26

