



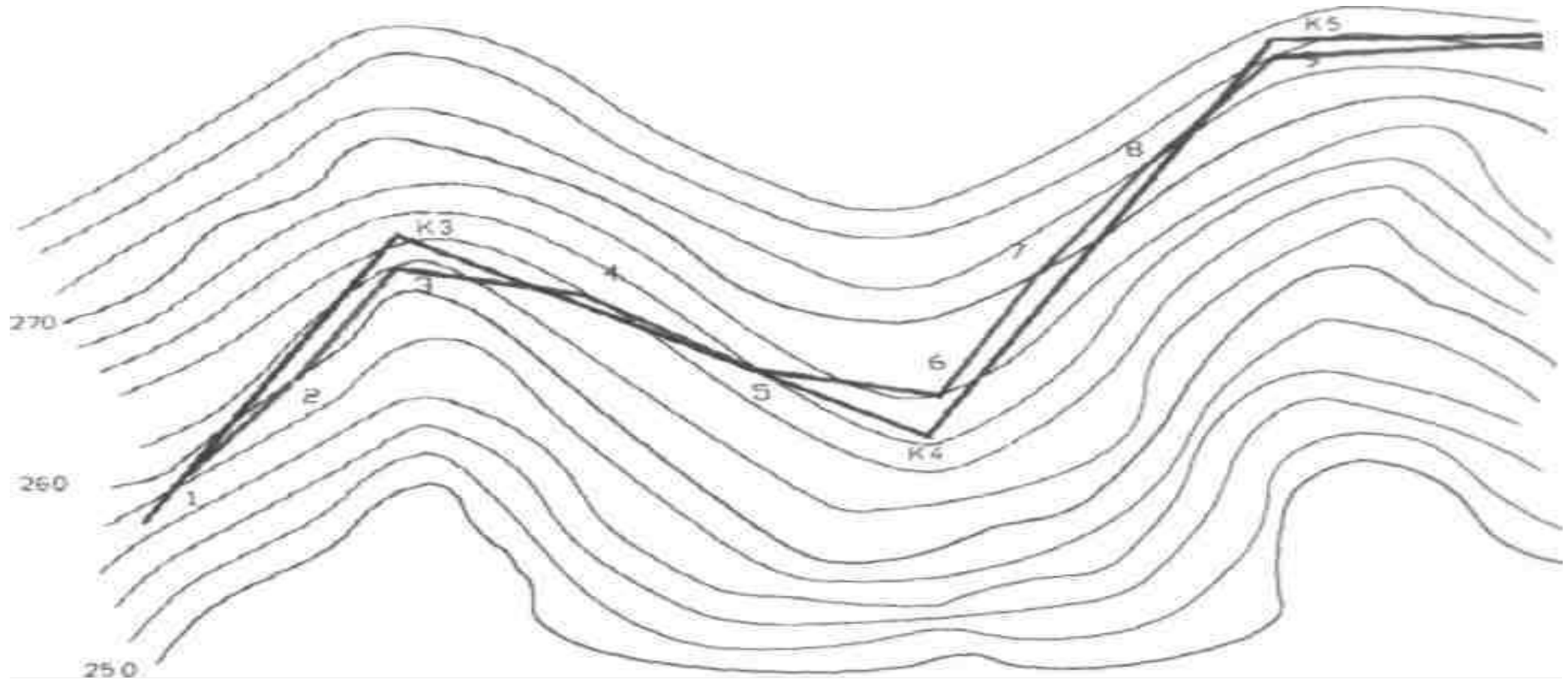
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(. : 3812)

- : ()

3.3.	14
3.4.	14
3.5.	15
3.6.	16
3.7.	17
3.8.	18
3.9.	19
3.10.	- ..	19
3.11.	20
3.12.	20
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	- ..	62
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2.1: μ $\mu\mu$

2.2: μ (103/ .). μ μ μ

	(km/h)	(m)	(m)
	120	16000	8000
	100	9000	5000
	80	5000	4000
	65	2500	2500
	50	1500	2000
	40	1000	1200
	30	500	700

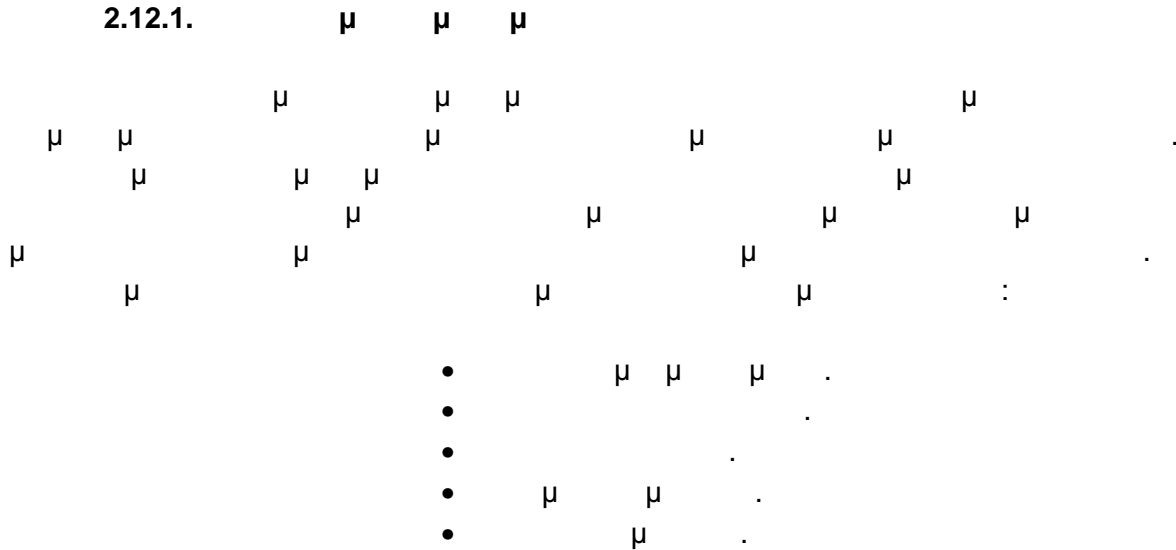
2.11.

μ μ μ , μ μ μ , μ μ μ , μ μ μ . μ μ μ , μ μ μ . μ μ μ : μ μ μ . μ μ μ . μ μ μ , μ μ μ , μ μ μ . μ μ μ , μ μ μ .

2.11.1. μ μ μ

μ μ : μ μ μ . μ μ μ .

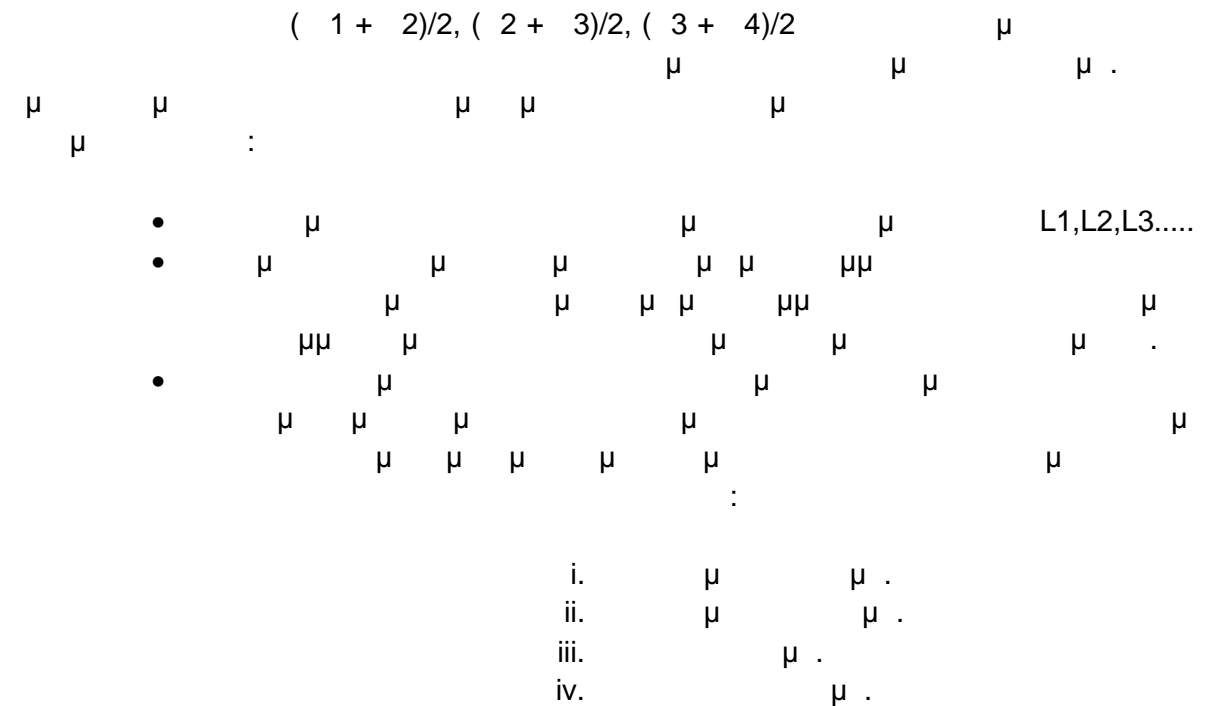
2.12.1.



2.12.2.

$$V_{\mu} = [(E_1 + E_2)/2] xL_1 + [(E_2 + E_3)/2] xL_2 + [(E_3 + E_4)/2] x... \quad (2.1)$$

$$V_{\mu} = [(E_1 + E_2)/2] xL_1 + [(E_2 + E_3)/2] xL_2 + [(E_3 + E_4)/2] x... \quad (2.2)$$



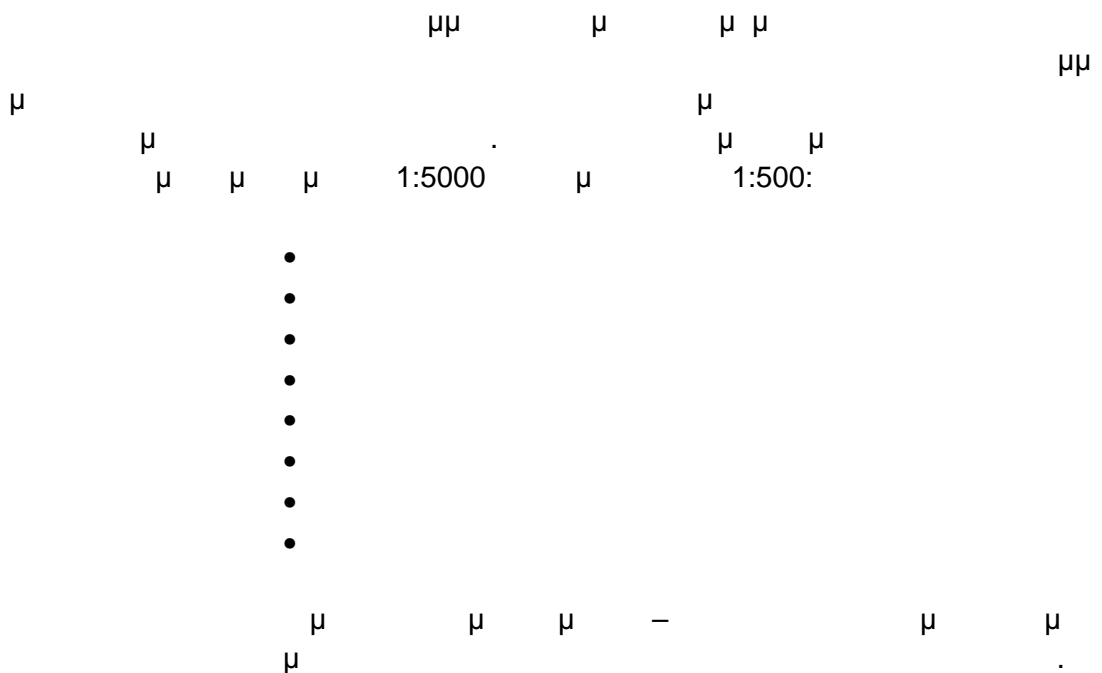
3.4

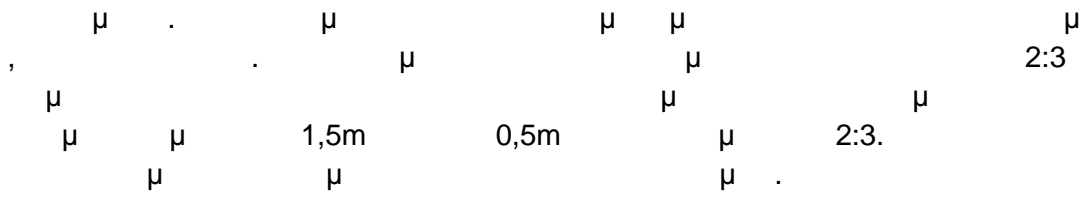
A/A	0	1	2	3	4	5
(g)	110	115	121	114	159	113
L	37,81	37,81	36,00	37,81	39,20	37,81
(m)	87,83	82,52	89,83	83,56	61,46	84,61
(m)	26,18	22,82	23,57	23,46	7,31	24,12
M(m)	150,91	144,63	160,09	145,88	119,70	147,14

3.5

/	0	1	2	3	4	5
R(m)	80	80	100	80	125	80
L	37,81	37,81	36,00	37,81	39,20	37,81
= - μ	68,96	63,65	71,85	64,69	41,88	65,74
= -2L	75,29	69,01	88,09	70,26	41,30	71,52
x	37,60	37,60	35,88	37,60	39,10	37,60
μ	18,87	18,87	17,98	18,87	19,58	18,87

3.7.





3.9.

μ μ μ



3.1: μ μ

3.10.

μ : μ μ μ μ

1. μ .
2. μ .

μ μ μ μ μ , μ

$$V = [(E1+E2)/2]^* 1 + [(E2+E3)/2]^* 2 + \dots \quad (3.1)$$

(1+ 2)/2, (2+ 3)/2,..... μ μ , μ μ .

3.11.

1. $(1, 2, 3, \dots)$
 $(1, 2, 3, \dots)$ $1:5000$
2. $(1, 2, 3, \dots)$ $(1, 2, 3, \dots)$
3. $(1, 2, 3, \dots)$ $(1, 2, 3, \dots)$ $= "$
- (3.1) $V = +332.033,1 \text{ m}^3$ $V = -359.398,8 \text{ m}^3$
 $V = -27.365,7 \text{ m}^3$

3.12.

1. $(1, 2, 3, \dots)$
2. $(1, 2, 3, \dots)$
3. $(1, 2, 3, \dots)$
4. $(1, 2, 3, \dots)$
5. $(1, 2, 3, \dots)$
6. $(1, 2, 3, \dots)$
7. $(1, 2, 3, \dots)$
8. $(1, 2, 3, \dots)$
9. $(1, 2, 3, \dots)$
10. $(1, 2, 3, \dots)$

3.6.1: μ μ

ΔΙΑΤΟΜΕΣ	ΧΙΛΙΟΜΕΤΡΙΚΗ ΘΕΣΗ	ΑΠΟΣΤΑΣΕΙΣ ΜΕΤΑΞΥ	ΕΚΧΩΜΑΤΑ			ΕΠΙΧΩΜΑΤΑ			ΣΥΝΤΕΛΕΣΤΗΣ ΕΠΙΠΛΗΞΙΑΣ	ΕΚΧΩΜΑ ΜΕ ΕΠΙΠΛΗΞΙΑ	ΕΚΧΩΜΑ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΟ ΣΤΗΝ ΙΔΙΑ ΔΙΑΤΟΜΗ	ΠΕΡΙΣΣΕΥΜΑΤΑ		ΑΛΓΕΒΡΙΚΟ ΑΓΡΟΙΣΜΑ ΑΠΟ ΤΗΝ ΑΡΧΗ
			ΕΠΙΦΑΝΕΙΕΣ ΕΚΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ	ΕΠΙΦΑΝΕΙΕΣ ΕΠΙΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ				ΕΚΧΩΜΑΤΑ (+)	ΕΠΙΧΩΜΑΤΑ (-)	
A	0+0		-			587,25								
		30,000		-	-		522,84	15685,20	1,00	-	15.685,20	-	-15.685,20	-15.685,20
1	0+30,00		-			458,43								
		30,000		-	-		466,80	14003,85	1,00	-	14.003,85	-	-14.003,85	-29.689,05
2	0+60,00		-			475,16								
		30,000		-	-		427,36	12820,80	1,00	-	12.820,80	-	-12.820,80	-42.509,85
3	0+90,00		-			379,56								
		30,000		-	-		439,17	13174,95	1,00	-	13.174,95	-	-13.174,95	-55.684,80
4	0+120,00		-			498,77								
		30,000		-	-		461,79	13853,55	1,00	-	13.853,55	-	-13.853,55	-69.538,35
5	0+150,00		-			424,80								
		30,000		-	-		495,34	14860,20	1,00	-	14.860,20	-	-14.860,20	-84.398,55
6	0+180,00		-			565,88								
		30,000		-	-		561,27	16837,95	1,00	-	16.837,95	-	-16.837,95	-101.236,50
7	0+210,00		-			556,65								
		30,000		-	-		544,37	16330,95	1,00	-	16.330,95	-	-16.330,95	-117.567,45
8	0+240,00		-			532,08								
		30,000		-	-		558,36	16750,80	1,00	-	16.750,80	-	-16.750,80	-134.318,25
9	0+270,00		-			584,64								
		30,000		-	-		504,19	15125,55	1,00	-	15.125,55	-	-15.125,55	-149.443,80
10	0+300,00		-			423,73								
		30,000		-	-		467,79	14033,70	1,00	-	14.033,70	-	-14.033,70	-163.477,50
11	0+330,00		-			511,85								
		23,500		-	-		538,77	12660,98	1,00	-	12.660,98	-	-12.660,98	-176.138,48

3.6.2:

μ μ

ΔΙΑΤΟΜΕΣ	ΧΙΛΙΟΜΕΤΡΙΚΗ ΘΕΣΗ	ΑΠΟΣΤΑΣΕΙΣ ΜΕΤΑΞΥ	ΕΚΧΩΜΑΤΑ			ΕΠΙΧΩΜΑΤΑ			ΣΥΝΤΕΛΕΣΤΗΣ ΕΠΙΠΛΗΣΜΑΤΟΣ	ΕΚΧΩΜΑ ΜΕ ΕΠΙΠΛΗΣΜΑ	ΕΚΧΩΜΑ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΟ ΣΤΗΝ ΙΔΙΑ ΔΙΑΤΟΜΗ	ΠΕΡΙΣΣΕΥΜΑΤΑ		ΑΛΓΕΒΡΙΚΟ ΑΓΡΟΙΣΜΑ ΑΠΟ ΤΗΝ ΑΡΧΗ	
			ΕΠΙΦΑΝΕΙΕΣ ΕΚΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ	ΕΠΙΦΑΝΕΙΕΣ ΕΠΙΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ				ΕΚΧΩΜΑΤΑ (+)	ΕΠΙΧΩΜΑΤΑ (-)		
A0	0+353,50		-			565,68									
		18,910	-	-	-		545,27	10311,06	1,00	-	10.311,06	-	-10.311,06	-186,449,53	
E0	0+372,41		-			524,86									
		18,910	-	-	-		530,32	10028,26	1,00	-	10.028,26	-	-10.028,26	-196,477,79	
Ω0	0+391,32		-			535,77									
		37,640	-	-	-		477,69	17980,25	1,00	-	17.980,25	-	-17.980,25	-214,458,04	
Δ0	0+428,96		-			419,61									
		37,640	-	-	-		416,96	15694,19	1,00	-	15.694,19	-	-15.694,19	-230,152,23	
Ω'0	0+466,60		-			414,30									
		18,910	-	-	-		356,58	6742,83	1,00	-	6.742,83	-	-6.742,83	-236,895,06	
E'0	0+485,51		-			298,85									
		18,910	-	-	-		283,60	5362,88	1,00	-	5.362,88	-	-5.362,88	-242,257,94	
A'0	0+504,42		-			268,35									
		30,000	-	-	-		234,81	7044,15	1,00	-	7.044,15	-	-7.044,15	-249,302,09	
12	0+534,42		-			201,26									
		30,000	-	-	-		205,71	6171,30	1,00	-	6.171,30	-	-6.171,30	-255,473,39	
13	0+564,42		-			210,16									
		30,000	-	-	-		244,24	7327,20	1,00	-	7.327,20	-	-7.327,20	-262,800,59	
14	0+594,42		-			278,32									
		30,000	-	-	-		281,26	8437,65	1,00	-	8.437,65	-	-5.437,65	-268,238,24	
15	0+624,42		-			284,19									
		30,000	-	-	-		277,20	8315,85	1,00	-	8.315,85	-	-5.315,85	-273,554,09	
16	0+654,42		-			270,20									
		30,000	-	-	-		263,99	7919,55	1,00	-	7.919,55	-	-4.919,55	-278,473,64	

3.6.3:

μ μ

ΔΙΑΤΟΜΕΣ	ΧΙΛΙΟΜΕΤΡΙΚΗ ΘΕΣΗ	ΑΠΟΣΤΑΣΕΙΣ ΜΕΤΑΞΥ	ΕΚΧΩΜΑΤΑ			ΕΠΙΧΩΜΑΤΑ			ΣΥΝΤΕΛΕΣΤΗΣ ΕΠΙΠΛΗΘΣΜΑΤΟΣ	ΕΚΧΩΜΑ ΜΕ ΕΠΙΠΛΗΘΣΜΑ	ΕΚΧΩΜΑ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΟ ΣΤΗΝ ΙΔΙΑ ΔΙΑΤΟΜΗ	ΠΕΡΙΣΣΕΥΜΑΤΑ		ΑΛΓΕΒΡΙΚΟ ΑΦΟΡΙΣΜΑ ΑΠΟ ΤΗΝ ΑΡΧΗ	
			ΕΠΙΦΑΝΕΙΕΣ ΕΚΧΩΜΑΤΩΝ	ΜΕΣΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ	ΕΠΙΦΑΝΕΙΕΣ ΕΠΙΧΩΜΑΤΩΝ	ΜΕΣΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ				ΕΚΧΩΜΑΤΑ (+)	ΕΠΙΧΩΜΑΤΑ (-)		
17	0+684,42		-			257,77									
		30,000		-	-		177,89	5336,70	1,00	-	5.336,70	-	-5.336,70		-283.810,34
18	0+714,42		-			98,01									
		30,000		-	-		61,12	1833,60	1,00	-	1.833,60	-	-1.833,60		-285.643,94
19	0+744,42		-			24,23									
		30,000		-	-		33,03	990,75	1,00	-	990,75	-	-990,75		-286.634,69
20	0+774,42		-			41,82									
		30,000		71,03	2.130,90		10,46	313,65	1,00	2.130,90	313,65	1.817,25			-284.817,44
21	0+804,42		284,12			-									
		29,500		280,32	8.269,29		-	-	1,00	8.269,29	-	8.269,29			-276.548,14
A1	0+833,92		276,51			-									
		18,91		235,28	4.449,05		-	-	1,00	4.449,05	0,00	4.449,05	-		-272.099,09
E1	0+852,83		194,04												
		18,91		202,44	3.828,05		-	-	1,00	3.828,05	0,00	3.828,05			-268.271,05
Ω1	0+871,74		210,83												
		34,500		309,80	10.688,10		-	-	1,00	10.688,10	0,00	10.688,10	-		-257.582,95
Δ1	0+906,24		408,77												
		34,500		380,07	13.112,24		-	-	1,00	13.112,24	0,00	13.112,24			-244.470,71
Ω'1	0+940,74		351,36												
		18,910		337,59	6.383,83		-	-	1,00	6.383,83	-	6.383,83	-		-238.086,88
E'1	0+959,65		323,82												
		18,910		326,98	6.183,19		-	-	1,00	6.183,19	-	6.183,19	-		-231.903,69
A'1	0+978,56		330,14												
		30,000		294,02	8.820,60		-	-	1,00	8.820,60	-	8.820,60	-		-223.083,09
22	1+8,56		257,9												

3.6.4:

μ μ

ΔΙΑΤΟΜΕΣ	ΧΙΛΙΟΜΕΤΡΙΚΗ ΘΕΣΗ	ΑΠΟΣΤΑΣΕΙΣ ΜΕΤΑΞΥ	ΕΚΧΩΜΑΤΑ			ΕΠΙΧΩΜΑΤΑ			ΣΥΝΤΕΛΕΣΤΗΣ ΕΠΙΠΛΗΘΣΜΑΤΟΣ	ΕΚΧΩΜΑ ΜΕ ΕΠΙΠΛΗΘΣΜΑ	ΕΚΧΩΜΑ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΟ ΣΤΗΝ ΙΔΙΑ ΔΙΑΤΟΜΗ	ΠΕΡΙΣΣΕΥΜΑΤΑ		ΑΛΓΕΒΡΙΚΟ ΑΦΟΡΙΣΜΑ ΑΠΟ ΤΗΝ ΑΡΧΗ
			ΕΠΙΦΑΝΕΙΕΣ ΕΚΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ	ΕΠΙΦΑΝΕΙΕΣ ΕΠΙΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ				ΕΚΧΩΜΑΤΑ (+)	ΕΠΙΧΩΜΑΤΑ (-)	
		30,000		247.72	7.431.60		-	-	1.00	7.431.60	-	7.431.60	-	-215.651,49
23	1+38.56		237,54			-								
		30,000		248.40	7.451.85		-	-	1.00	7.451.85	0.00	7.451.85	-	-208.199,64
24	1+68.56		259,25											
		30,000		224.37	6.730.95		-	-	1.00	6.730.95	0.00	6.730.95	-	-201.468,69
25	1+98.56		189,48			-								
		30,000		224.69	6.740.70		-	-	1.00	6.740.70	-	6.740.70	-	-194.727,99
26	1+128.56		259,90			-								
		30,000		191.84	5.755.05		-	-	1.00	5.755.05	-	5.755.05	-	-188.972,94
27	1+158.56		123,77			-								
		27,500		230.57	6.340.54		-	-	1.00	6.340.54	-	6.340.54	-	-182.632,40
A2	1+186.06		337,36			-								
		18,000		348.82	6.278.67		-	-	1.00	6.278.67	0.00	6.278.67	-	-176.353,73
E2	1+204.06		360,27											
		18,000		346.36	6.234.48		-	-	1.00	6.234.48	0.00	6.234.48	-	-170.119,25
Ω2	1+222.06		332,45											
		44,040		297.44	13.099.26		-	-	1.00	13.099.26	0.00	13.099.26	-	-157.019,99
Δ2	1+266.10		262,43											
		44,050		329.24	14.502.80		-	-	1.00	14.502.80	0.00	14.502.80	-	-142.517,19
Ω 2	1+310.15		396,04			-								
		18,000		404.10	7.273.71		-	-	1.00	7.273.71	-	7.273.71	-	-135.243,48
E' 2	1+328.15		412,15			-								
		18,000		434.17	7.814.97		-	-	1.00	7.814.97	-	7.814.97	-	-127.428,51
A' 2	1+346.15		456,18			-								
		30,000		446.99	13.409.70		-	-	1.00	13.409.70	-	13.409.70	-	-114.018,81

3.6.5:

μ μ

ΔΙΑΤΟΜΕΣ	ΧΙΛΙΟΜΕΤΡΙΚΗ ΘΕΣΗ	ΑΠΟΣΤΑΣΕΙΣ ΜΕΤΑΞΥ	ΕΚΧΩΜΑΤΑ			ΕΠΙΧΩΜΑΤΑ			ΣΥΝΤΕΛΕΣΤΗΣ ΕΠΙΠΛΗΣΜΑΤΟΣ	ΕΚΧΩΜΑ ΜΕ ΕΠΙΠΛΗΣΜΑ	ΕΚΧΩΜΑ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΟ ΣΤΗΝ ΙΔΙΑ ΔΙΑΤΟΜΗ	ΠΕΡΙΣΣΕΥΜΑΤΑ		ΑΛΓΕΒΡΙΚΟ ΑΦΟΡΙΣΜΑ ΑΠΟ ΤΗΝ ΑΡΧΗ
			ΕΠΙΦΑΝΕΙΕΣ ΕΚΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ	ΕΠΙΦΑΝΕΙΕΣ ΕΠΙΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ				ΕΚΧΩΜΑΤΑ (+)	ΕΠΙΧΩΜΑΤΑ (-)	
28	1+376.15		437,80			-								
		30,000		442.52	13.275.60				1.00	13.275.60		13.275.60	-	-100.743,21
29	1+406.15		447,24			-								
		30,000		447.17	13.415.10				1.00	13.415.10		13.415.10	-	-87.328,11
30	1+436.15		447,10			-								
		30,000		442.93	13.287.75				1.00	13.287.75		13.287.75	-	-74.040,36
31	1+466.15		438,75			-								
		30,000		404.09	12.122.70				1.00	12.122.70		12.122.70	-	-61.917,66
32	1+496.15		369,43			-								
		30,000		328.56	9.856.65				1.00	9.856.65		9.856.65	-	-52.061,01
33	1+526.15		287,68			-								
		21,150		300.21	6.349.44				1.00	6.349.44	0.00	6.349.44	-	-45.711,57
A3	1+547.3		312,74											
		18,910		313.65	5.931.12				1.00	5.931.12	0.00	5.931.12	-	-39.780,45
E3	1+566.21		314,56											
		18,910		328.36	6.209.19				1.00	6.209.19	0.00	6.209.19	-	-33.571,25
Ω3	1+585.12		342,15											
		35,130		331.94	11.660.88				1.00	11.660.88	0.00	11.660.88	-	-21.910,38
Δ3	1+620.25		321,72			-								
		35,130		380.75	13.375.57				1.00	13.375.57		13.375.57	-	-8.534,81
Ω'3	1+655.38		439,77			-								
		18,910		368.59	6.969.94				1.00	6.969.94	0.00	6.969.94	-	-1.564,86
E'3	1+374.29		297,40											
		18,910		314.63	5.949.56				1.00	5.949.56		5.949.56	-	4.384,70
A'3	1+693.2		331,85			-								
		30,000		363.30	10.899.00				1.00	10.899.00		10.899.00	-	15.283,70
34	1+723.2		394,75			-								

3.6.6:

μ μ

ΔΙΑΤΟΜΕΣ	ΧΙΛΙΟΜΕΤΡΙΚΗ ΘΕΣΗ	ΑΠΟΣΤΑΣΕΙΣ ΜΕΤΑΞΥ	ΕΚΧΩΜΑΤΑ			ΕΠΙΧΩΜΑΤΑ			ΣΥΝΤΕΛΕΣΤΗΣ ΕΠΙΠΛΗΘΙΣΜΑΤΟΣ	ΕΚΧΩΜΑ ΜΕ ΕΠΙΠΛΗΘΙΣΜΑ	ΕΚΧΩΜΑ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΟ ΣΤΗΝ ΙΔΙΑ ΔΙΑΤΟΜΗ	ΠΕΡΙΣΣΕΥΜΑΤΑ		ΑΛΓΕΒΡΙΚΟ ΑΘΡΟΙΣΜΑ ΑΠΟ ΤΗΝ ΑΡΧΗ
			ΕΠΙΦΑΝΕΙΕΣ ΕΚΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ	ΕΠΙΦΑΝΕΙΕΣ ΕΠΙΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ				ΕΚΧΩΜΑΤΑ (+)	ΕΠΙΧΩΜΑΤΑ (-)	
		30,000		396,70	11.901,00		-	-	1,00	11.901,00	-	11.901,00	-	27.184,70
35	1+753.2		398,65											
		30,000		106,14	3.184,20		-	-	1,00	3.184,20	-	3.184,20	-	30.368,90
36	1+783.2		212,28											
		30,000		120,68	3.620,40		1,06	31,88	1,00	3.620,40	31,88	3.588,53	-	33.957,42
37	1+813.20		29,08			4,25								
		30,000		29,20	875,85		1,06	31,88	1,00	875,85	31,88	843,98	-	34.801,40
38	1+843.2		29,31											
		30,000		7,33	219,83		5,70	170,93	1,00	219,83	170,93	48,90	-	34.850,30
39	1+873.2		-			22,79								
		30,000		10,64	319,28		5,70	170,93	1,00	319,28	170,93	148,35	-	34.998,65
40	1+903.2		42,57											
		30,000		10,64	319,28		16,20	485,93	1,00	319,28	485,93	-	-166,65	34.832,00
41	1+933.2		-			64,79								
		30,000		-	-		51,54	1471,05	1,00	-	1.471,05	-	-1.471,05	33.360,95
42	1+963.2		-			38,28								
		19,000		6,36	120,75		9,57	181,83	1,00	120,75	181,83	-	-181,83	33.179,12
A4	1+982.2		25,42											
		19,600		17,89	350,55		3,18	62,33	1,00	350,55	62,33	288,22	-	33.467,33
E4	2+1.8		10,35			6,36								
		19,600		184,10	3.608,26		3,18	62,33	1,00	3.608,26	62,33	3.545,93	-	37.013,27
Ω4	2+21.4		357,84											
		20,650		227,93	4.706,75		-	-	1,00	4.706,75	-	4.706,75	-	41.720,02
Δ4	2+42.05		98,02											
		20,650		160,17	3.307,41		-	-	1,00	3.307,41	-	3.307,41	-	45.027,43
Ω4	2+62.7		222,31											

3.6.7:

μ μ

ΔΙΑΤΟΜΕΣ	ΧΙΛΙΟΜΕΤΡΙΚΗ ΘΕΣΗ	ΑΠΟΣΤΑΣΕΙΣ ΜΕΤΑΞΥ	ΕΚΧΩΜΑΤΑ			ΕΠΙΧΩΜΑΤΑ			ΣΥΝΤΕΛΕΣΤΗΣ ΕΠΙΠΛΗΣΜΑΤΟΣ	ΕΚΧΩΜΑ ΜΕ ΕΠΙΠΛΗΣΜΑ	ΕΚΧΩΜΑ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΟ ΣΤΗΝ ΙΔΙΑ ΔΙΑΤΟΜΗ	ΠΕΡΙΣΣΕΥΜΑΤΑ		ΑΛΓΕΒΡΙΚΟ ΑΘΡΩΣΜΑ ΑΠΟ ΤΗΝ ΑΡΧΗ
			ΕΠΙΦΑΝΕΙΣ ΕΚΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΣ	ΚΥΒΟΙ	ΕΠΙΦΑΝΕΙΣ ΕΠΙΧΩΜΑΤΩΝ	ΜΕΣΣΕΣ ΕΠΙΦΑΝΕΙΣ	ΚΥΒΟΙ				ΕΚΧΩΜΑΤΑ (+)	ΕΠΙΧΩΜΑΤΑ (-)	
		19,600		269,95	5.291,02		-	-	1,00	5.291,02	-	5.291,02	-	50.318,45
E'4	2+82,3		317,59											
		19,600		269,38	5.279,75		-	-	1,00	5.279,75	-	5.279,75	-	55.598,20
A'4	2+101,9		221,16											
		30,000		175,15	5.254,35		-	-	1,00	5.254,35	-	5.254,35	-	60.852,55
43	2+131,9		129,13											
		30,000		32,28	968,48		45,12	1353,60	1,00	968,48	1.353,60	-	-1.353,60	59.498,95
44	2+161,9				180,48									
		30,000		-	-		197,63	5928,75	1,00	-	5.928,75	-	-5.928,75	53.570,20
45	2+191,9		-		214,77									
		10,500		-	-		212,01	2226,11	1,00	-	2.226,11	-	-2.226,11	51.344,09
A5	2+202,4		-		209,25									
		18,910		-	-		233,13	4408,49	1,00	-	4.408,49	-	-4.408,49	46.915,61
E5	2+221,31		-		257,01									
		18,910		-	-		264,26	5375,36	1,00	-	5.375,36	-	-5.375,36	41.560,25
Ω5	2+240,22		-		311,51									
		35,760		-	-		199,87	7147,35	1,00	-	7.147,35	-	-7.147,35	34.412,90
Δ5	2+275,98		-		88,23									
		35,760		-	-		65,78	2352,11	1,00	-	2.352,11	-	-2.352,11	32.060,78
Ω'5	2+311,74		-		43,32									
		18,910		-	-		40,49	765,57	1,00	-	765,57	-	-765,57	31.295,21
E'5	2+330,65		-		37,65									
		18,910		-	-		43,04	813,79	1,00	-	813,79	-	-813,79	30.481,42
A'5	2+349,56		-		48,42									
		34,500		-	-		81,94	1549,39	1,00	-	1.549,39	-	-1.549,39	28.932,03
46	2+384,06				115,45									

3.6.8:

μ μ

ΔΙΑΤΟΜΕΣ	ΧΙΛΙΟΜΕΤΡΙΚΗ ΘΕΣΗ	ΑΠΟΣΤΑΣΕΙΣ ΜΕΤΑΞΥ	ΕΚΧΩΜΑΤΑ			ΕΠΙΧΩΜΑΤΑ			ΣΥΝΤΕΛΕΣΤΗΣ ΕΠΙΠΛΗΞΜΑΤΟΣ	ΕΚΧΩΜΑ ΜΕ ΕΠΙΠΛΗΞΜΑ	ΕΚΧΩΜΑ ΧΡΗΣΙΜΟΠΟΙΗΜΕΝΟ ΣΤΗΝ ΙΔΙΑ ΔΙΑΤΟΜΗ	ΠΕΡΙΣΣΕΥΜΑΤΑ		ΑΛΓΕΒΡΙΚΟ ΑΦΟΡΙΣΜΑ ΑΠΟ ΤΗΝ ΑΡΧΗ
			ΕΠΙΦΑΝΕΙΕΣ ΕΚΧΩΜΑΤΩΝ	ΜΕΣΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ	ΕΠΙΦΑΝΕΙΕΣ ΕΠΙΧΩΜΑΤΩΝ	ΜΕΣΣ ΕΠΙΦΑΝΕΙΕΣ	ΚΥΒΟΙ				ΕΚΧΩΜΑΤΑ (+)	ΕΠΙΧΩΜΑΤΑ (-)	
		30,000		-	-		137,64	4129,20	1,00	-	4.129,20	-	-4.129,20	24.802,83
47	2+414.06					159,83								
		30,000		-	-		199,58	5987,25	1,00	-	5.987,25	-	-5.987,25	18.815,58
48	2+444.06					239,32								
		30,000		-	-		268,12	8043,45	1,00	-	8.043,45	-	-8.043,45	10.772,13
49	2+474.06					296,91								
		30,000		-	-		358,69	10760,55	1,00	-	10.760,55	-	-10.760,55	11,58
B	2+534.06					420,46								

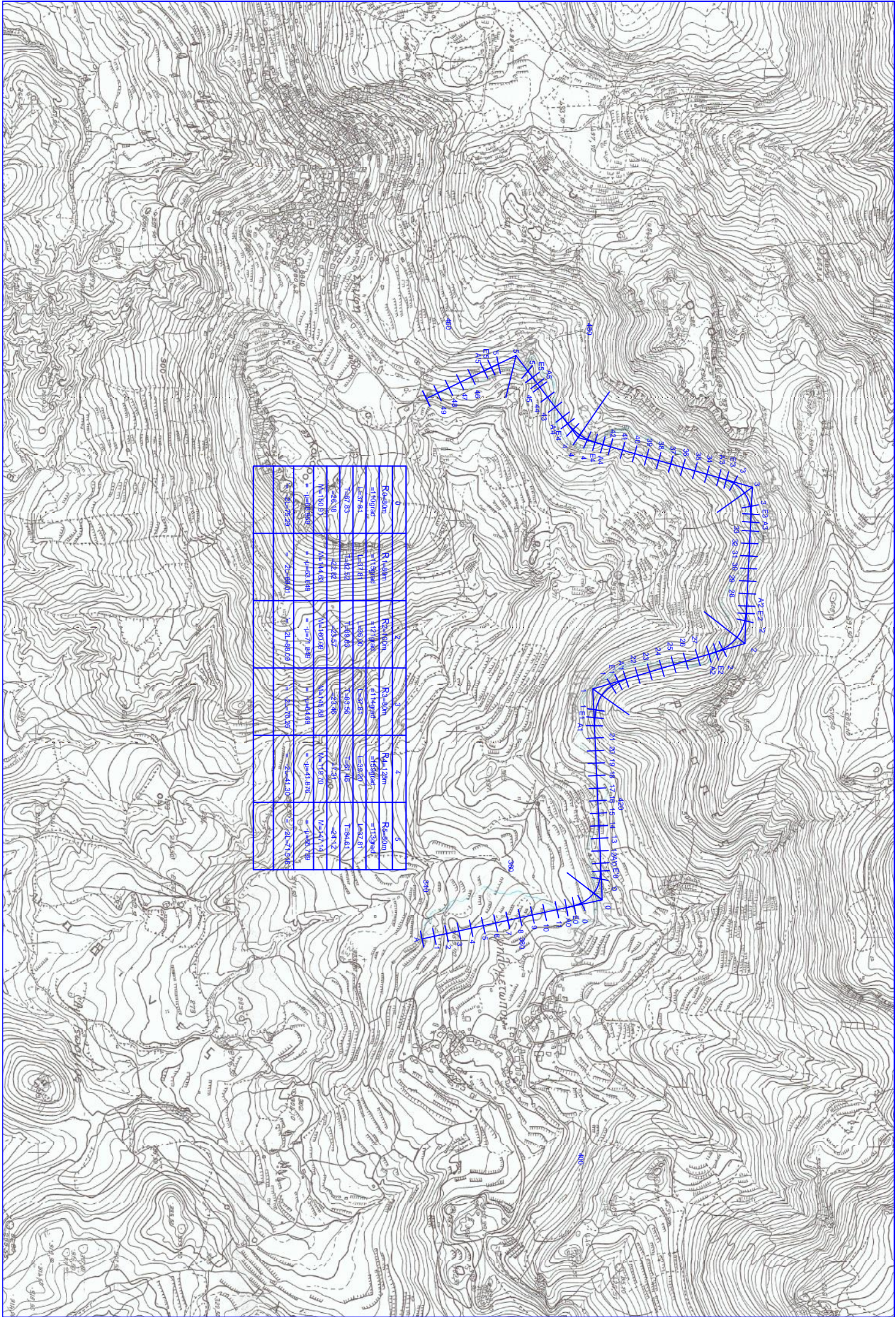
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Redouan E=1609m	Redouan E=1739m	Redouan E=1830m	Redouan E=1890m	Redouan E=1930m	Redouan E=1930m
E=2784	E=4181	E=5320	E=6281	E=7027	E=7621
E=8723	E=9432	E=9928	E=10326	E=10616	E=10841
E=10910	E=11297	E=11637	E=11930	E=12176	E=12372
M=100B	M=944E	M=860G	M=748H	M=619Z	M=4714
E=1609m	E=1739m	E=1830m	E=1890m	E=1930m	E=1930m
E=2784	E=4181	E=5320	E=6281	E=7027	E=7621
E=8723	E=9432	E=9928	E=10326	E=10616	E=10841
E=10910	E=11297	E=11637	E=11930	E=12176	E=12372
M=100B	M=944E	M=860G	M=748H	M=619Z	M=4714



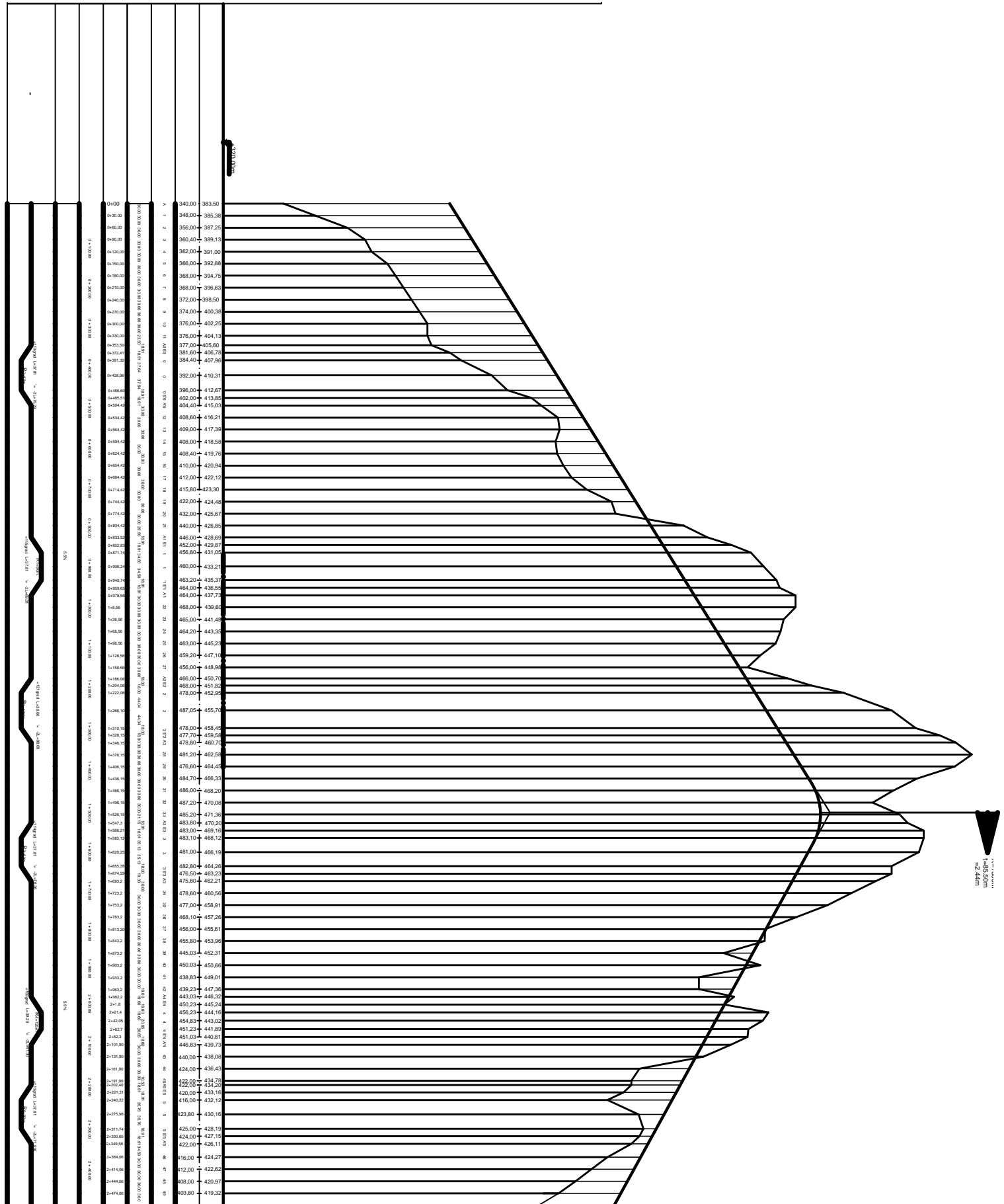
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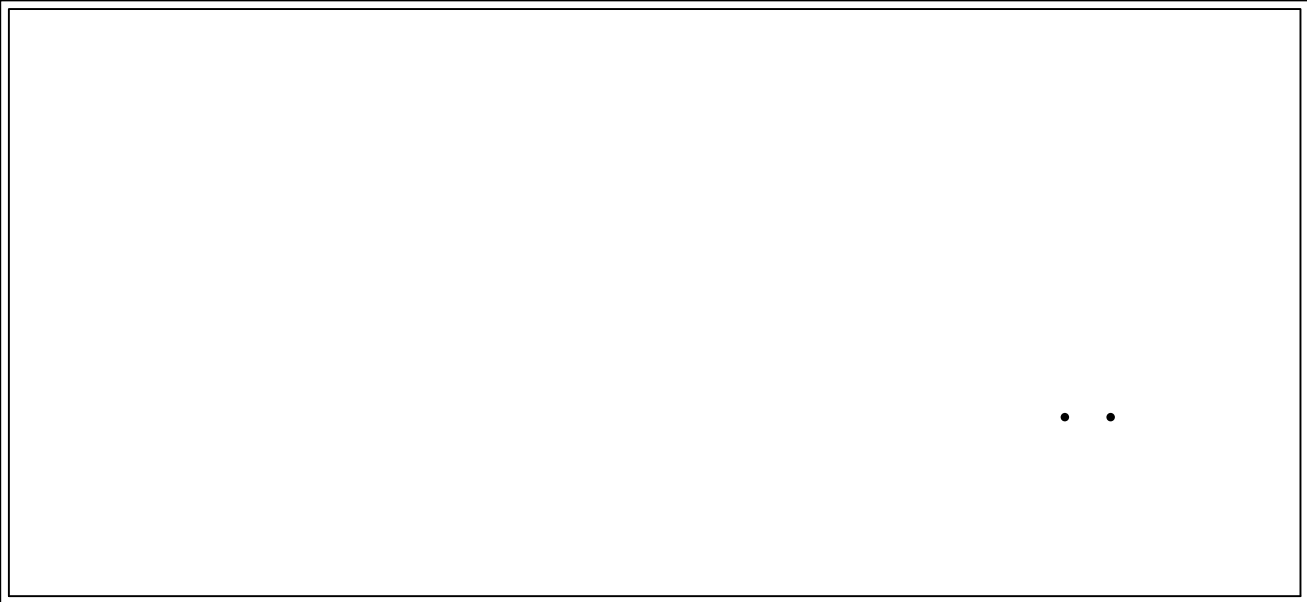
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μ	μ .
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02	2016
	μ μ
	-



6.550m
2.44m

Stationing	Left Elevation	Right Elevation
0+00	340.00	383.50
0+10	348.00	385.38
0+20	356.00	387.25
0+30	360.40	389.13
0+40	362.00	391.00
0+50	366.00	392.88
0+60	368.00	394.75
0+70	368.00	396.63
0+80	372.00	398.50
0+90	374.00	400.38
1+00	376.00	402.25
1+10	376.00	404.13
1+20	377.00	405.99
1+30	381.60	406.79
1+40	384.40	407.96
1+50	392.00	410.31
1+60	396.00	412.67
1+70	402.00	413.86
1+80	404.40	415.03
1+90	408.60	416.21
2+00	409.00	417.39
2+10	408.00	418.58
2+20	408.40	419.76
2+30	410.00	420.94
2+40	412.00	422.12
2+50	415.80	423.30
2+60	422.00	424.48
2+70	432.00	425.67
2+80	440.00	426.85
2+90	446.00	428.03
3+00	452.00	429.21
3+10	456.80	431.05
3+20	460.00	433.23
3+30	463.20	435.97
3+40	464.00	438.55
3+50	464.00	437.73
3+60	468.00	439.61
3+70	465.00	441.49
3+80	464.20	443.35
3+90	463.00	445.23
4+00	459.20	447.10
4+10	456.00	448.98
4+20	466.00	450.70
4+30	468.00	451.82
4+40	478.00	452.85
4+50	487.05	455.70
4+60	478.00	458.49
4+70	477.70	459.68
4+80	478.80	460.70
4+90	481.20	462.58
5+00	476.60	464.44
5+10	484.70	466.33
5+20	486.00	468.20
5+30	487.20	470.08
5+40	486.20	471.36
5+50	483.80	470.50
5+60	483.00	469.16
5+70	483.10	468.12
5+80	481.00	466.19
5+90	482.80	464.28
6+00	478.50	463.20
6+10	475.80	462.21
6+20	478.60	460.56
6+30	477.00	458.91
6+40	468.10	457.26
6+50	456.00	455.61
6+60	455.80	453.96
6+70	445.03	452.31
6+80	450.03	450.66
6+90	438.83	449.01
7+00	439.23	447.36
7+10	443.03	446.32
7+20	450.23	445.24
7+30	456.23	444.16
7+40	454.83	443.02
7+50	451.23	441.89
7+60	451.03	440.81
7+70	446.83	439.73
7+80	440.00	438.08
7+90	424.00	436.43
8+00	422.00	434.78
8+10	420.00	433.16
8+20	416.00	432.12
8+30	423.80	430.16
8+40	425.00	428.19
8+50	424.00	427.15
8+60	422.00	426.11
8+70	416.00	424.27
8+80	412.00	422.62
8+90	408.00	420.97
9+00	403.80	419.32



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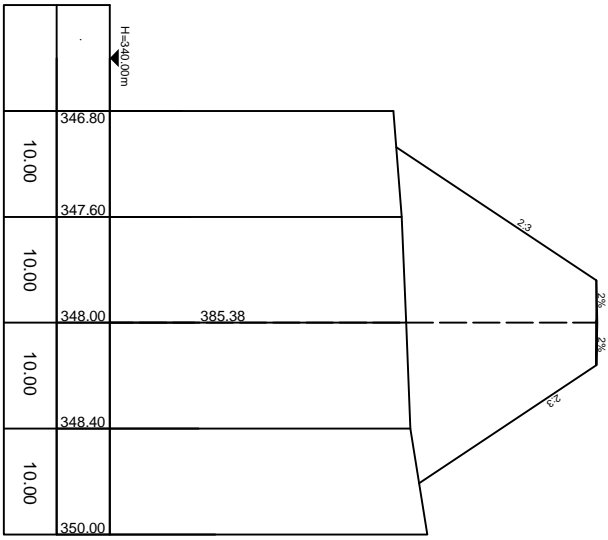
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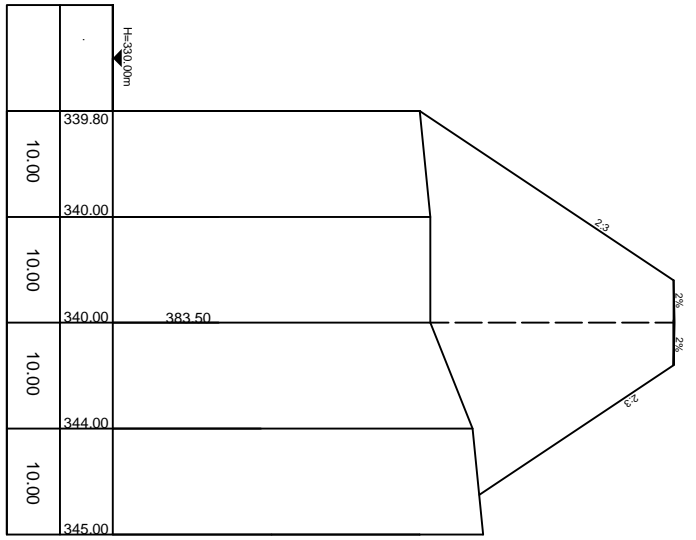
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	μ μ	2016
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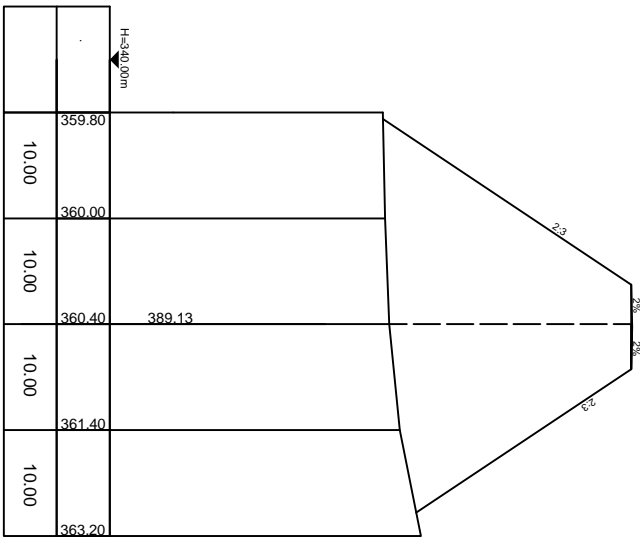
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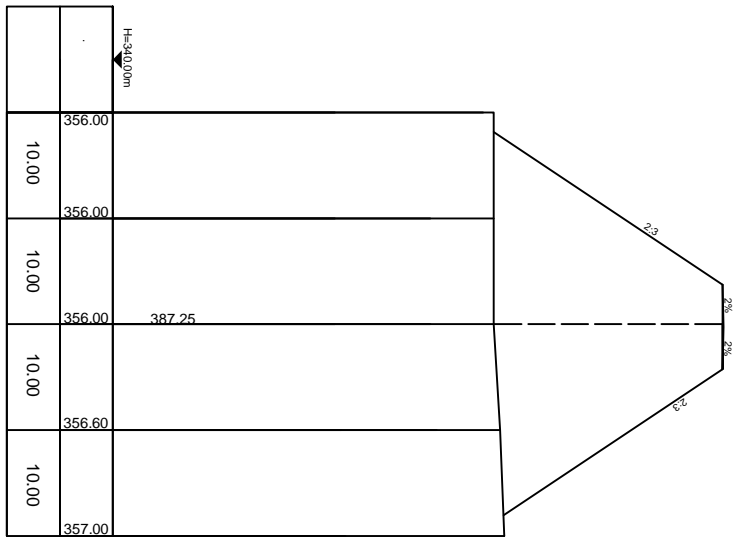
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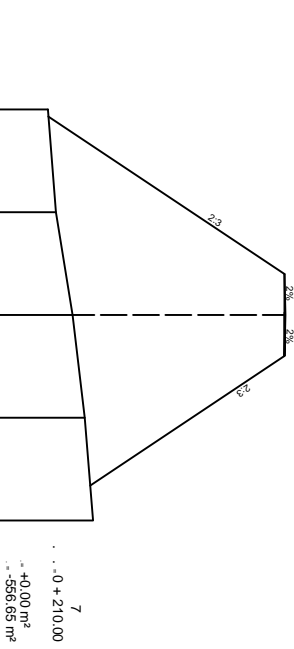
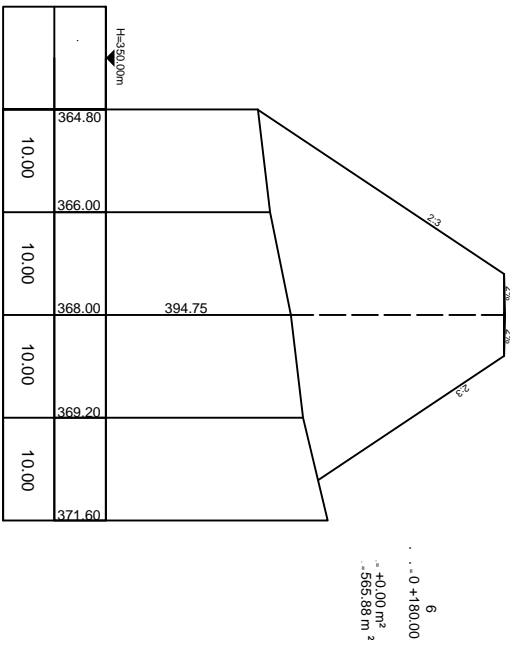
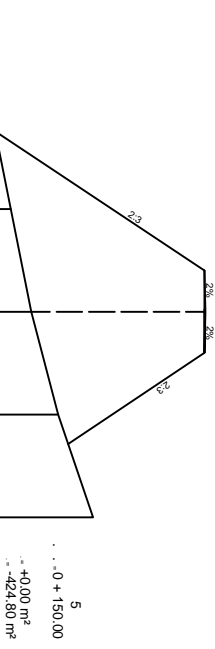
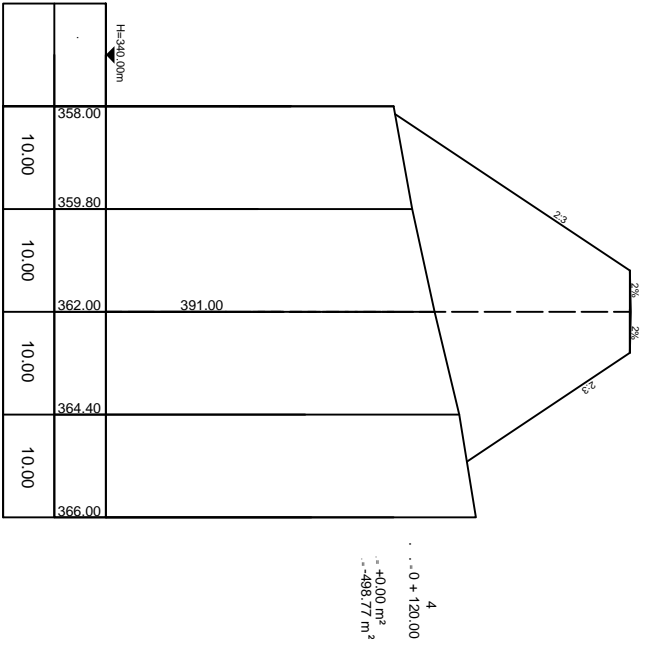
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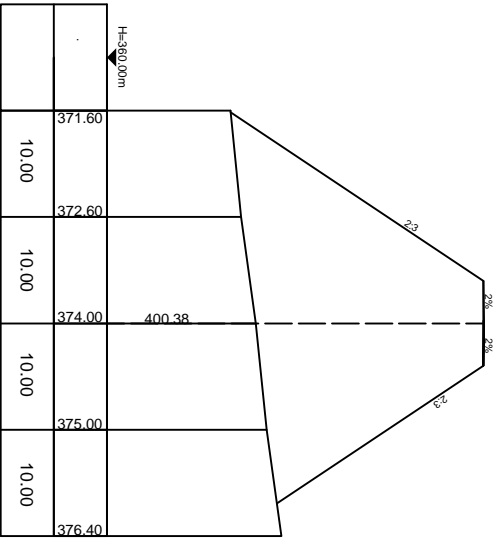


3
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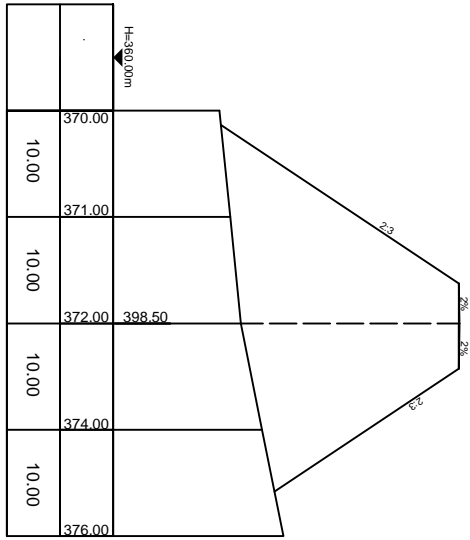


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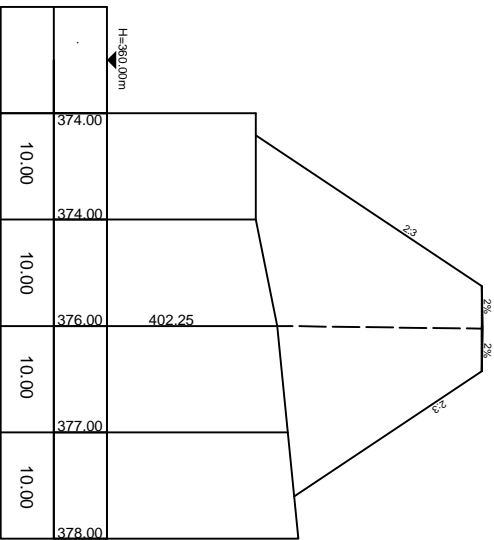




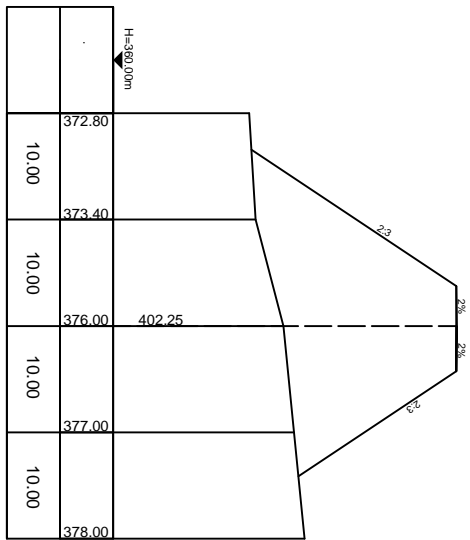
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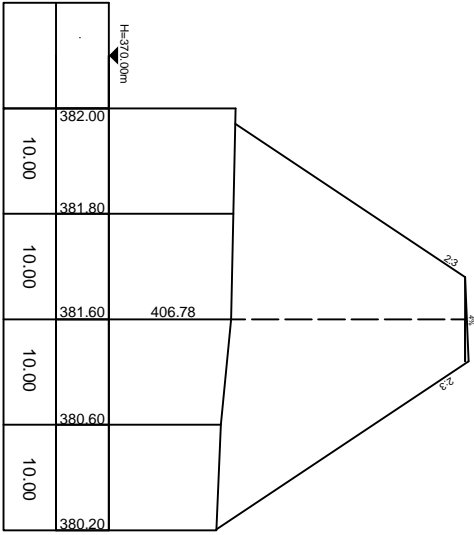
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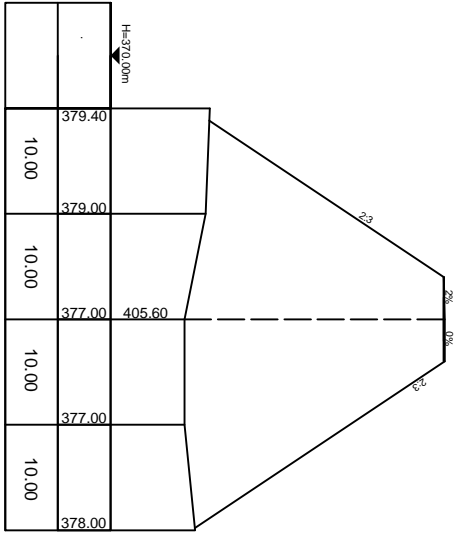
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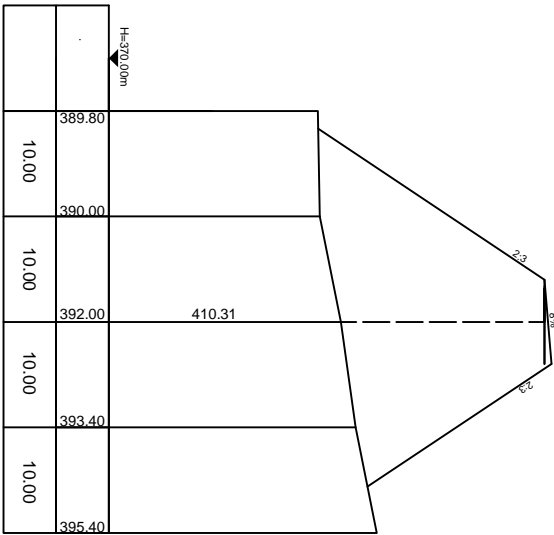
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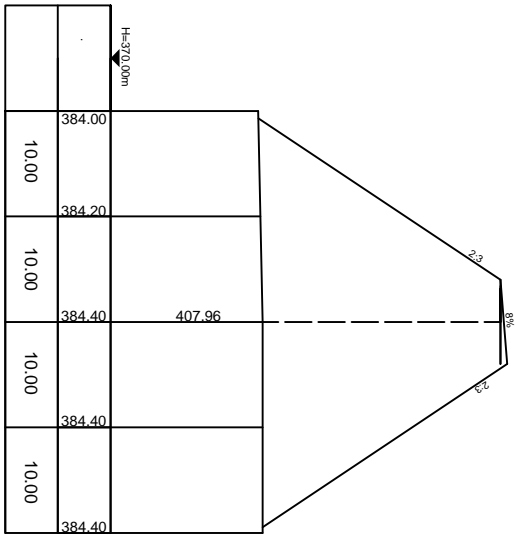
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 = +0.00 m²
 = -524.88 m²



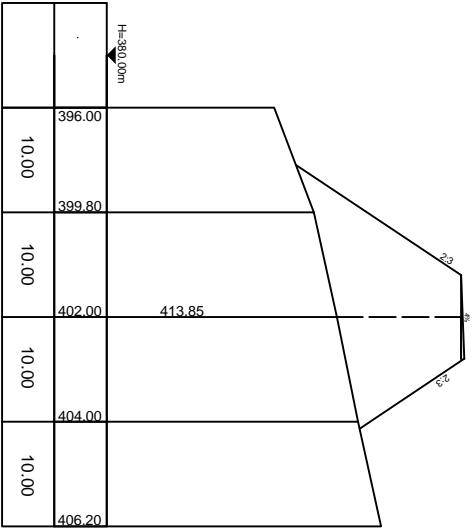
A0
 . . . 0 + 333.50
 = +0.00 m²
 = -565.68 m²



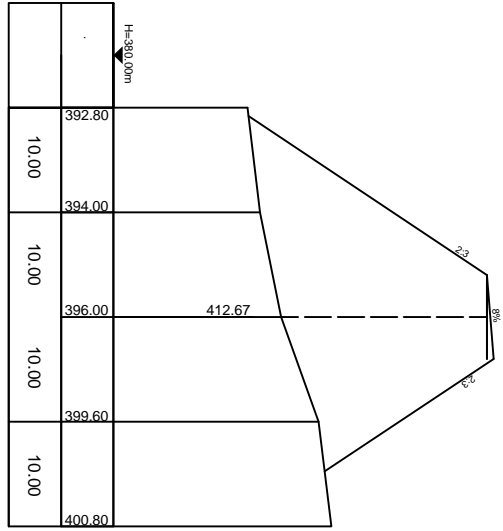
0
 . . . 0 + 428.96
 = +0.00 m²
 = -479.61 m²



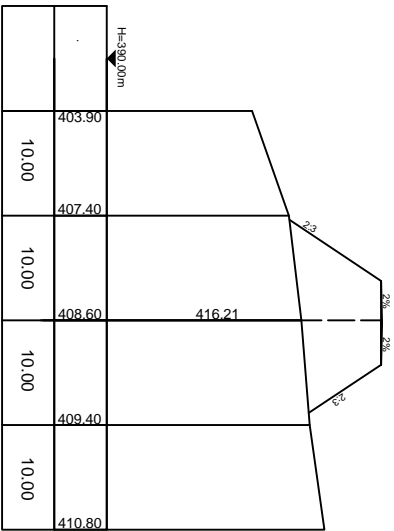
0
 . . . 0 + 391.32
 = +0.00 m²
 = -535.77 m²



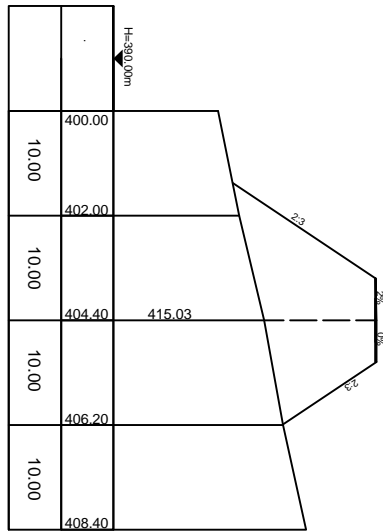
. . . 0 + 485.51
 E0
 . . . +0.00 m²
 . . . -298.85 m²



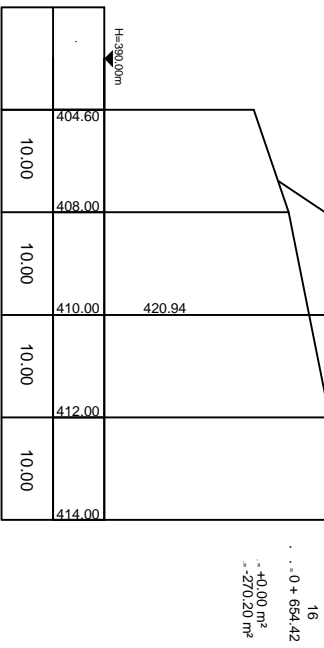
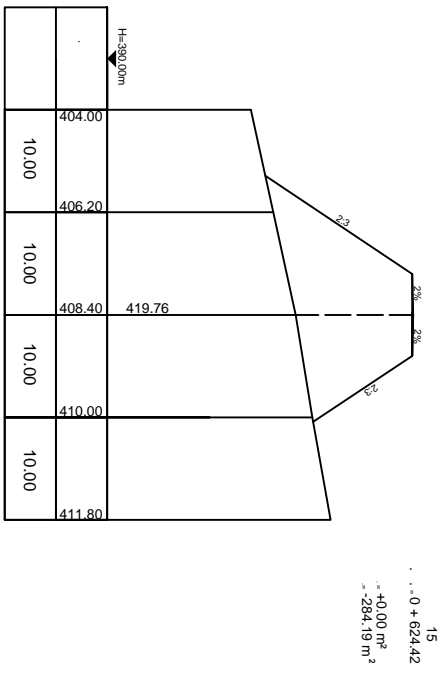
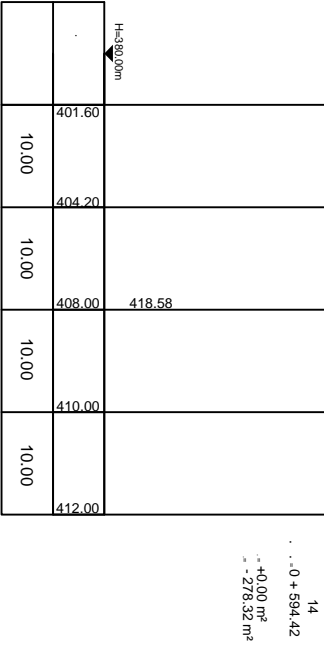
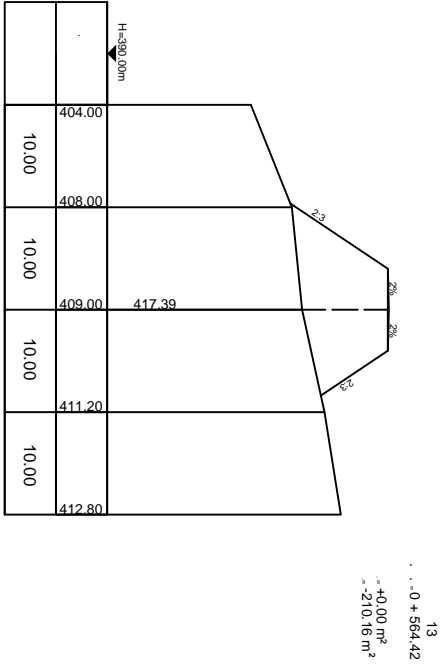
. . . 0 + 466.60
 0
 . . . +0.00 m²
 . . . -414.30 m²

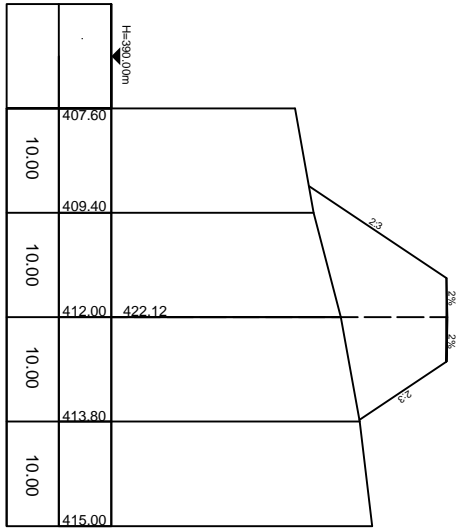


. . . 0 + 534.42
 12
 . . . +0.00 m²
 . . . -201.26 m²

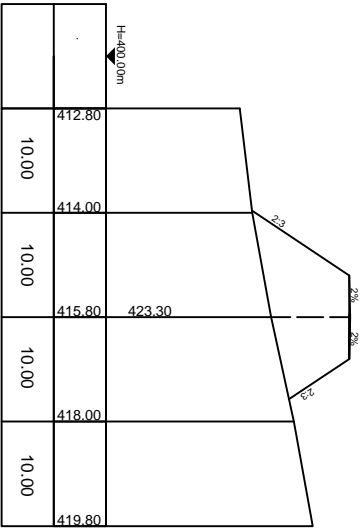


. . . 0 + 504.42
 A0
 . . . +0.00 m²
 . . . -268.33 m²

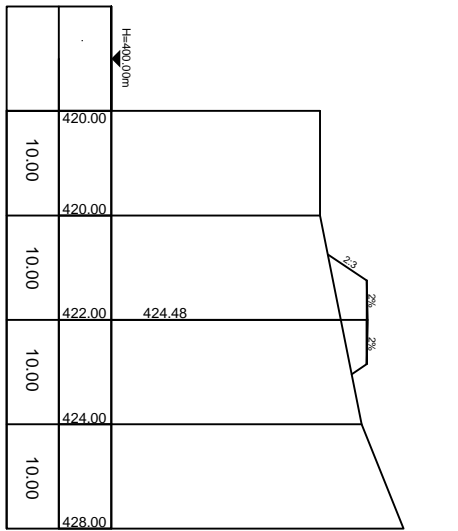




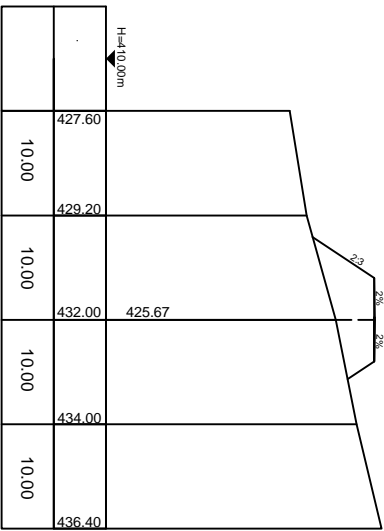
17
 . . . 0 + 684.42
 = +0.00 m²
 = -237.77 m²



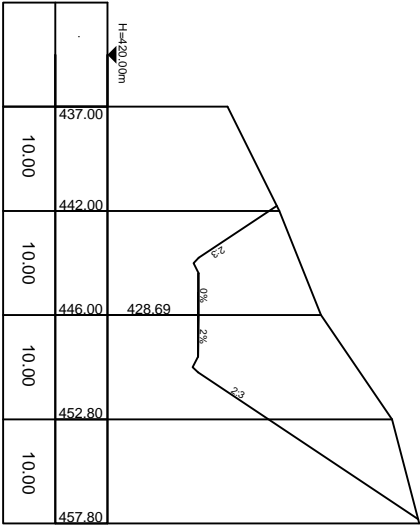
18
 . . . 0 + 714.42
 = +0.00 m²
 = -98.01 m²



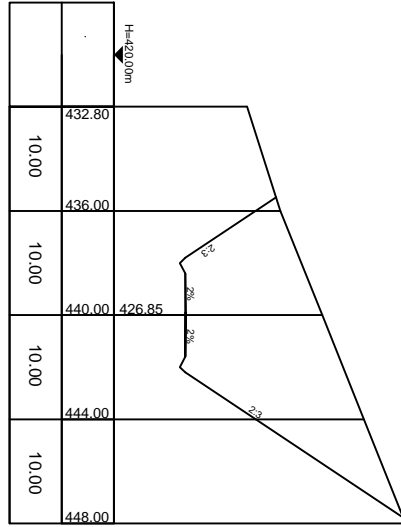
19
 . . . 0 + 744.42
 = +0.00 m²
 = -24.29 m²



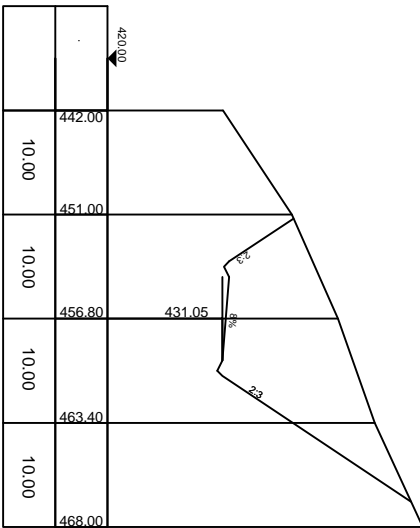
20
 . . . 0 + 774.42
 = +0.00 m²
 = -41.82 m²



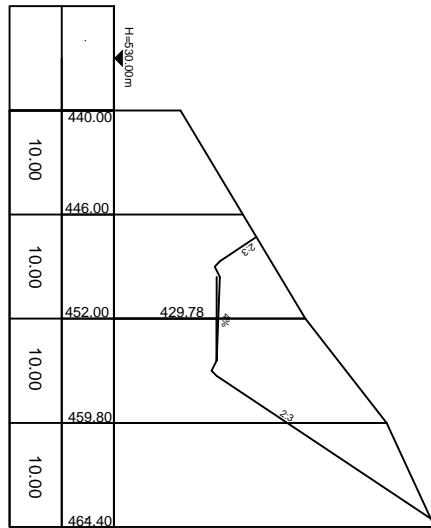
. . . 0 + 833.92
 A1
 = +276.51 m²
 = -0.00 m³



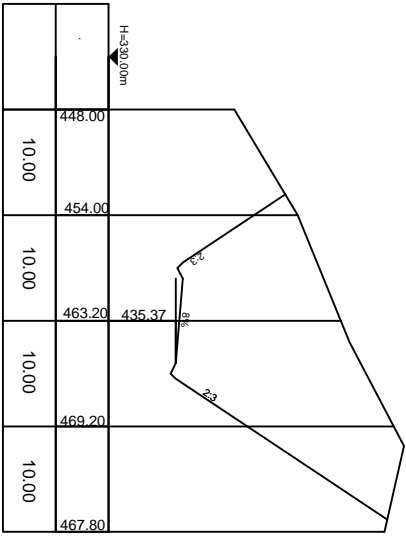
. . . 0 + 804.42
 21
 = +284.12 m²
 = -0.00 m³



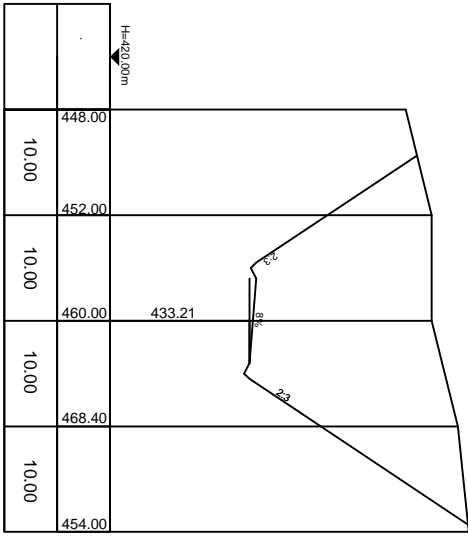
. . . 0 + 871.74
 1
 = +210.83 m²
 = -0.00 m³



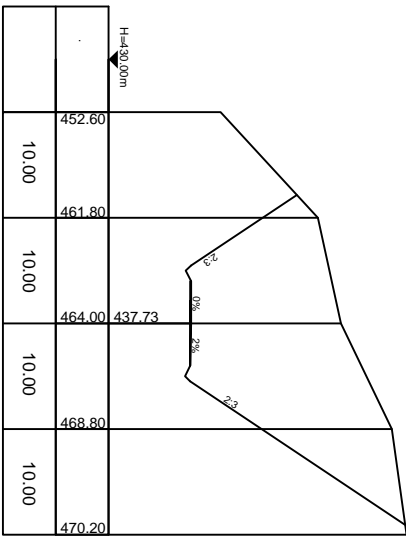
. . . 0 + 852.83
 E1
 = +194.04 m²
 = -0.00 m³



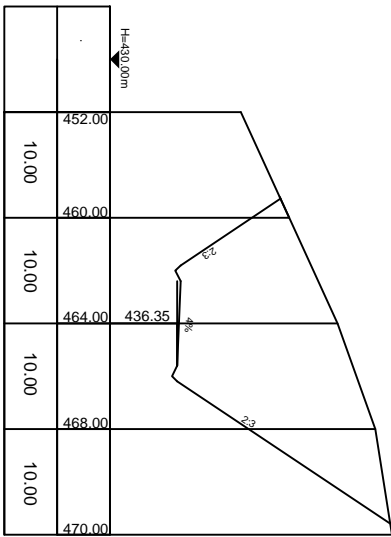
. . . 0 + 940.74
 = +351.36 m²
 = -0.00 m²



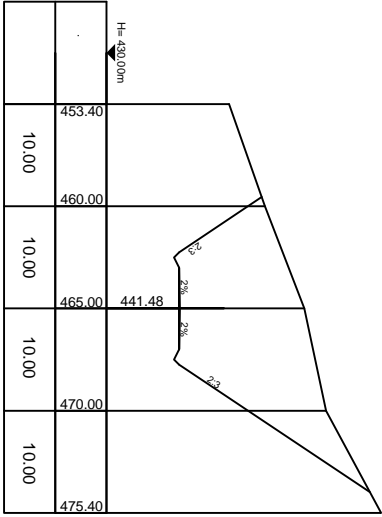
. . . 0 + 906.24
 = +408.77 m²
 = -0.00 m²



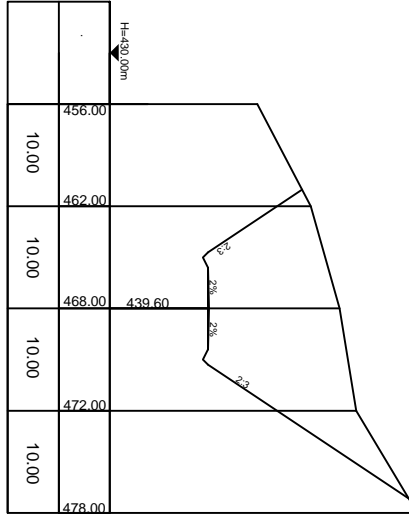
. . . 0 + 978.56
 = +330.14 m²
 = -0.00 m²



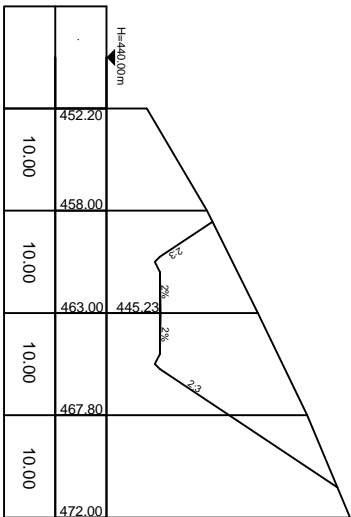
. . . 0 + 959.65
 = +323.82 m²
 = -0.00 m²



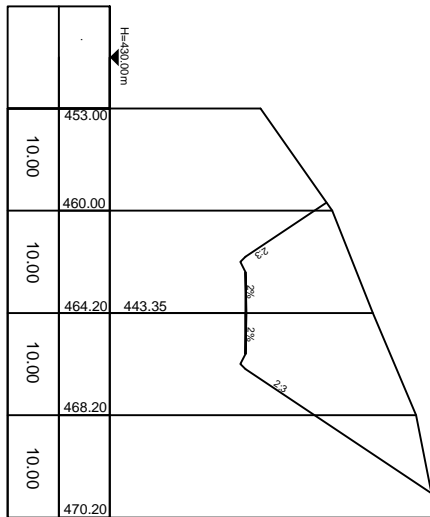
23
 .. -1 + 38.56
 .. +237.54 m²
 .. -0.00 m³



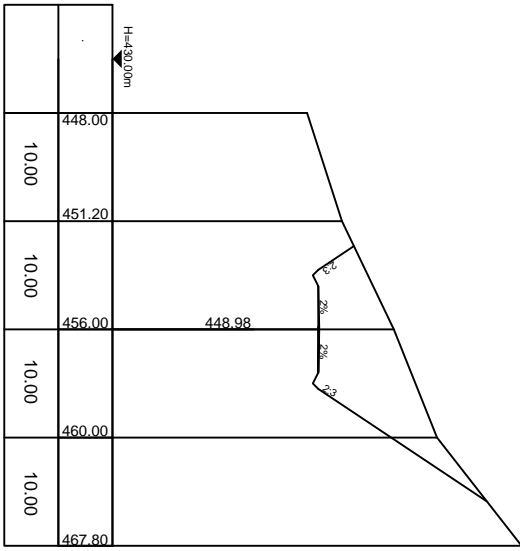
22
 .. -1 + 8.56
 .. +257.90 m²
 .. -0.00 m³



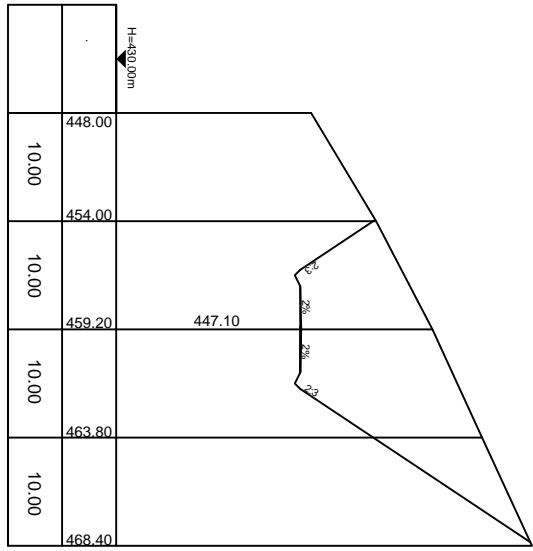
25
 .. -1 + 98.56
 .. +189.48 m²
 .. -0.00 m³



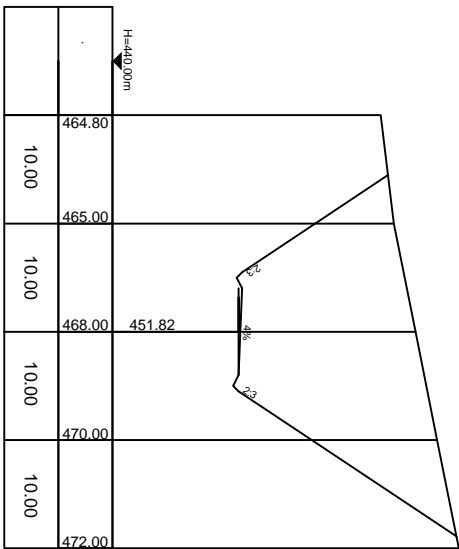
24
 .. -1 + 68.56
 .. +259.25 m²
 .. -0.00 m³



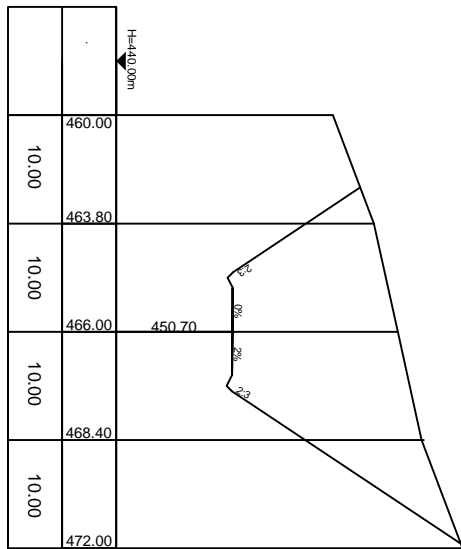
27
 . . . 1 + 158.56
 . . +123.77 m²
 . . -0.00 m²



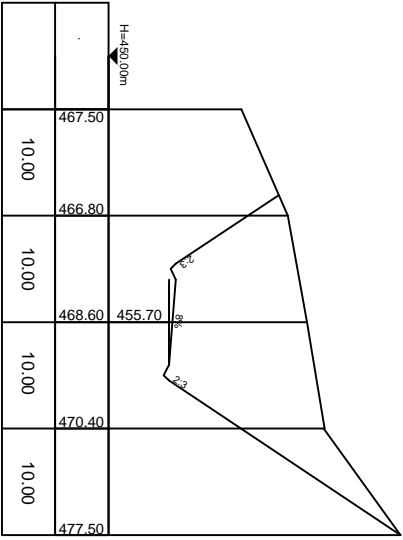
26
 . . . 1 + 128.56
 . . +239.90 m²
 . . -0.00 m²



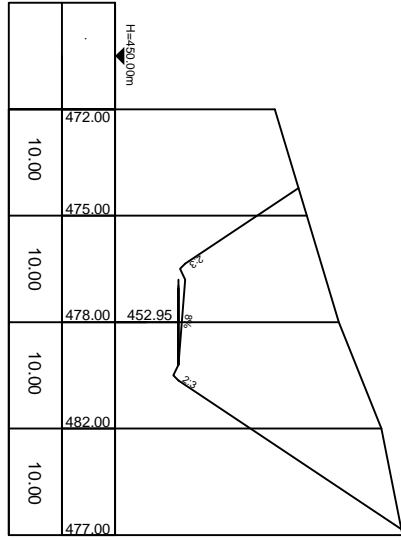
E2
 . . . 1 + 204.06
 . . +360.27 m²
 . . -0.00 m²



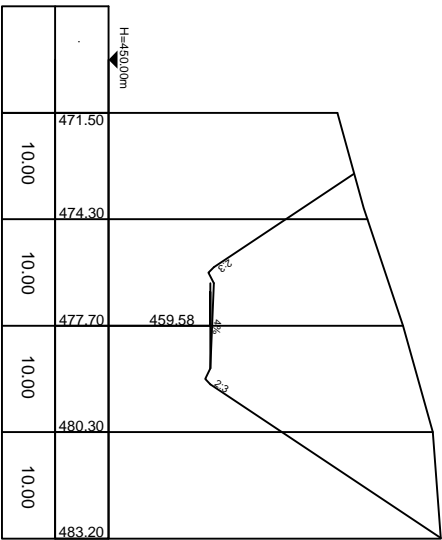
A2
 . . . 1 + 186.06
 . . +337.36 m²
 . . -0.00 m²



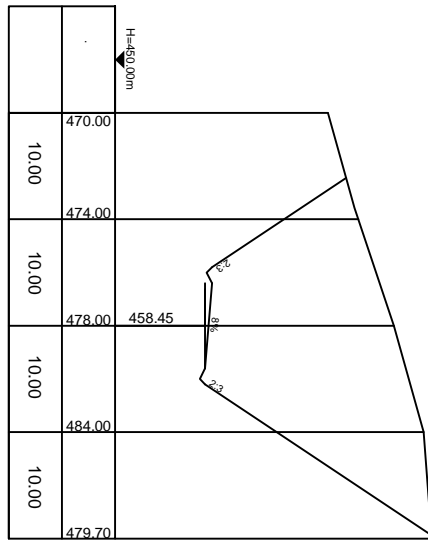
. . . 1 + 266.10
 . . +262.43 m²
 . . -0.00 m²



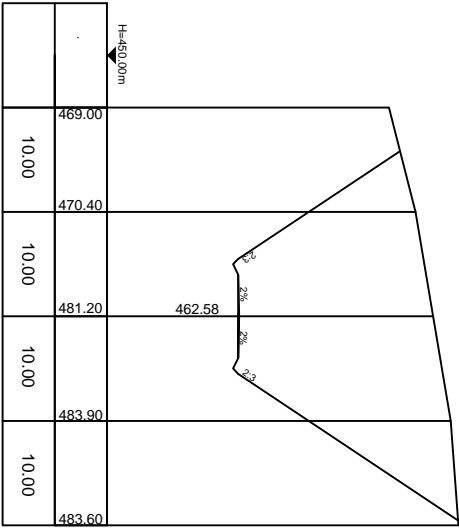
. . . 1 + 222.06
 . . +332.45 m²
 . . -0.00 m²



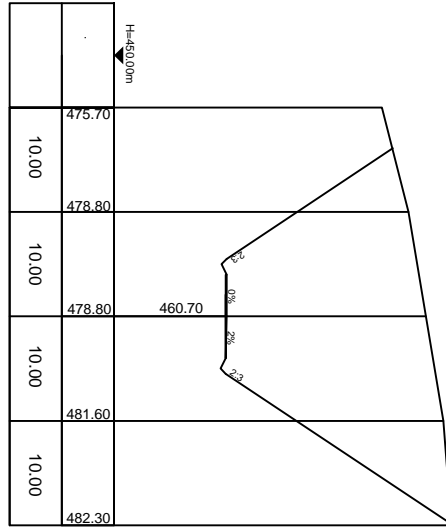
. . . 1 + 328.15
 . . +412.15 m²
 . . -0.00 m²



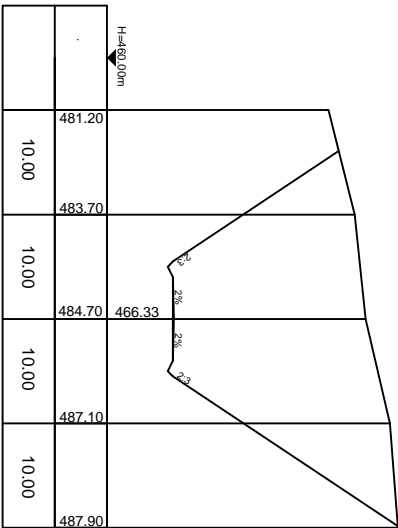
. . . 1 + 310.15
 . . +396.04 m²
 . . -0.00 m²



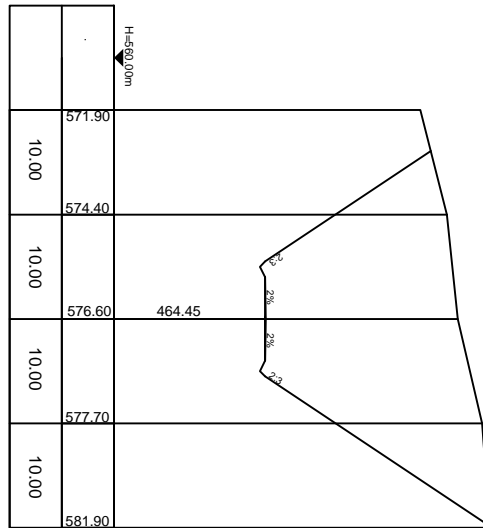
28
 . . . 1+376.15
 = +437.80 m²
 = -0.00 m²



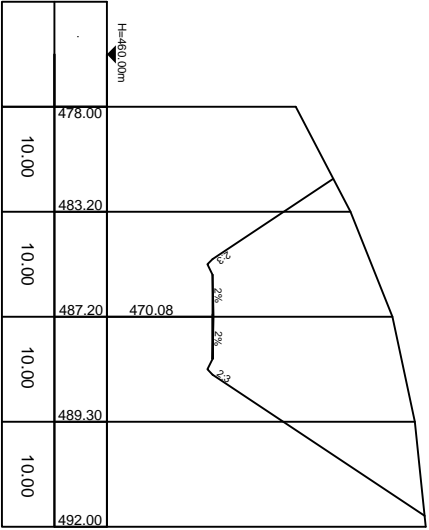
2
 . . . 1+346.15
 = +456.18 m²
 = -0.00 m²



30
 . . . 1+436.15
 = +447.10 m²
 = -0.00 m²

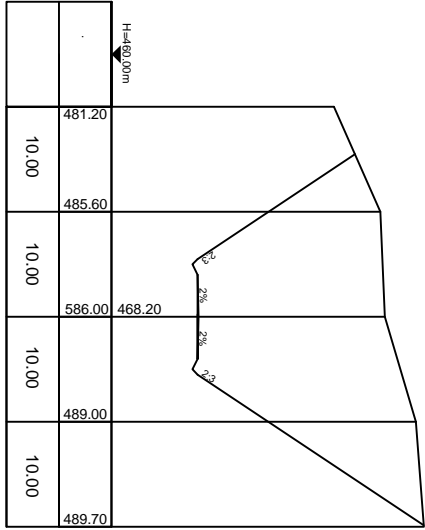


29
 . . . 1+406.15
 = +447.24 m²
 = -0.00 m²



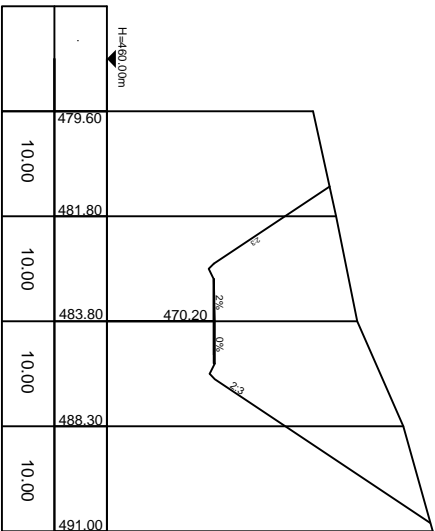
. . . 1+496.15
 = +369.43 m²
 = -0.00 m²

32



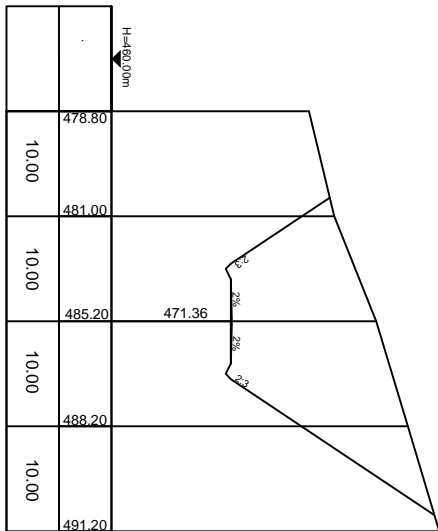
. . . 1+488.15
 = +438.75 m²
 = -0.00 m²

31



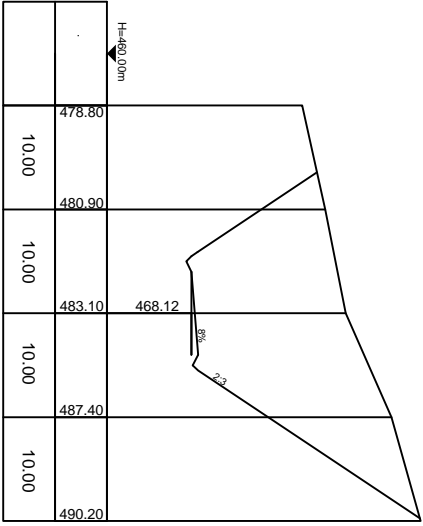
. . . 1+547.30
 = +312.74 m²
 = -0.00 m²

A3

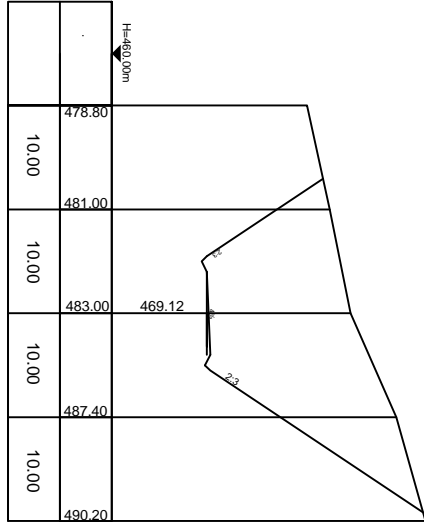


. . . 1+528.15
 = +287.68 m²
 = -0.00 m²

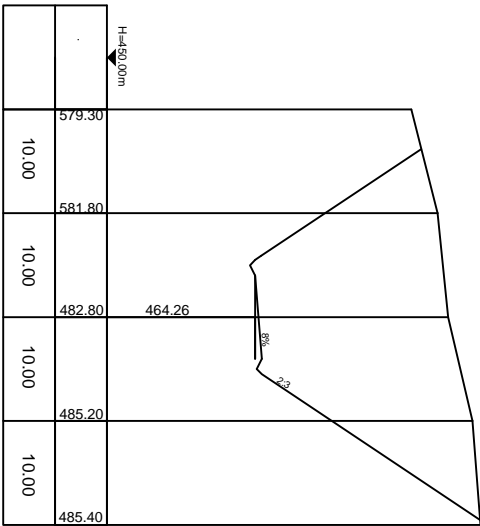
33



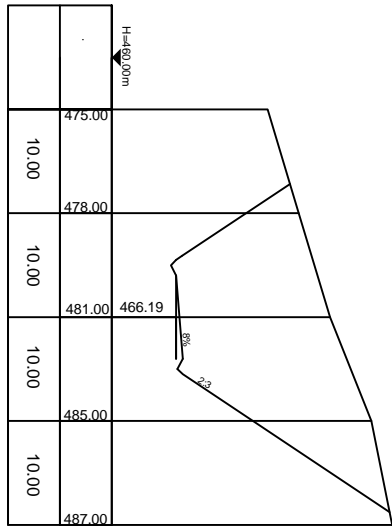
3
 . . . 1+585.12
 = +342.15 m²
 = -0.00 m²



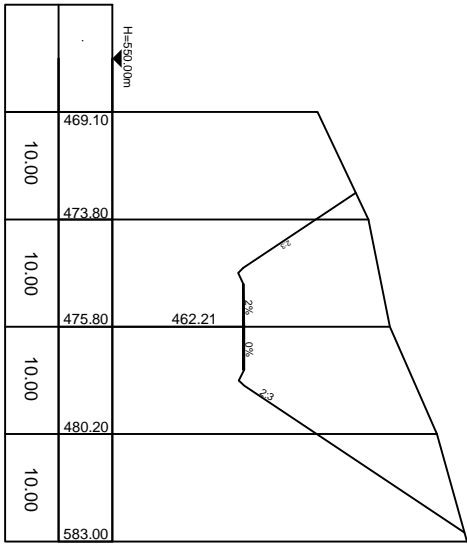
E3
 . . . 1+566.21
 = +314.53 m²
 = -0.00 m²



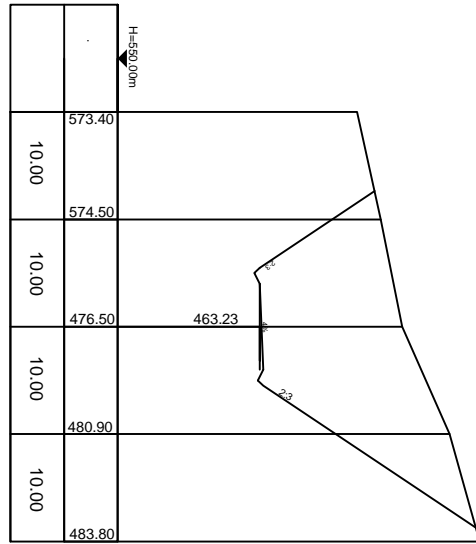
3
 . . . 1+655.38
 = +439.77 m²
 = -0.00 m²



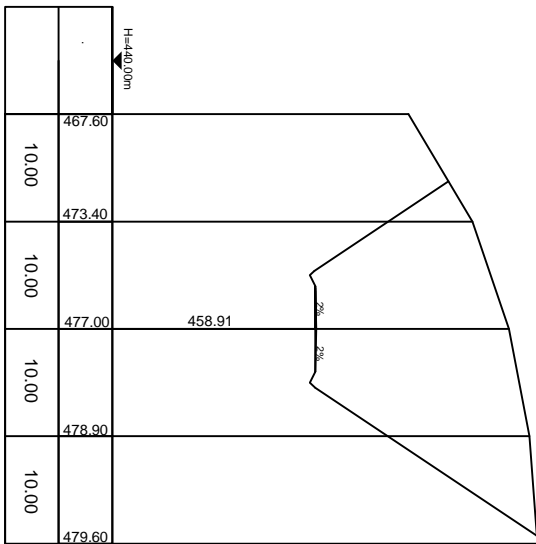
3
 . . . 1+620.25
 = +321.72 m²
 = -0.00 m²



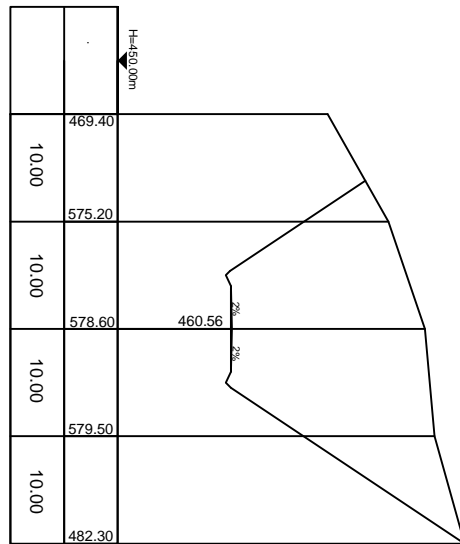
A/3
 . . . +1+693.20
 = +311.85 m²
 = -0.00 m²



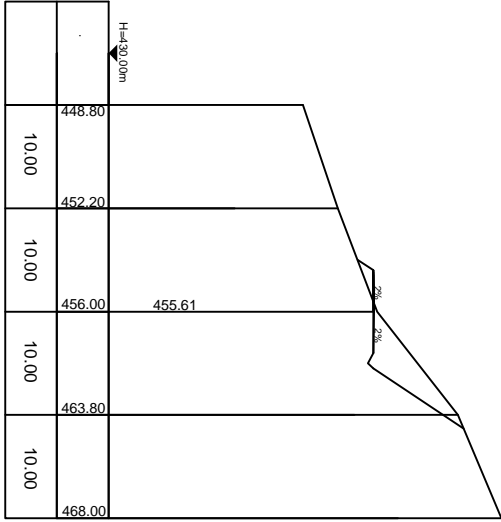
E/3
 . . . +1+674.29
 = +297.40 m²
 = -0.00 m²



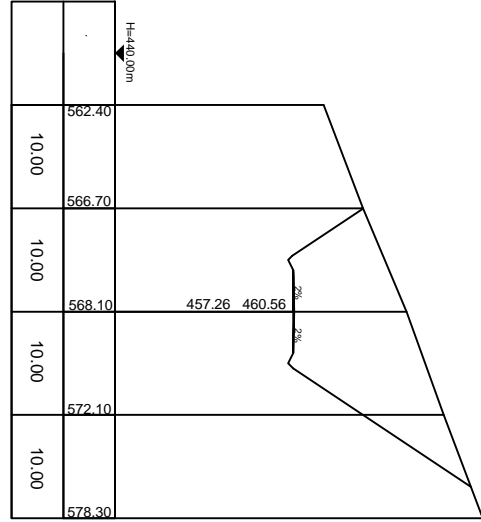
3/5
 . . . +1+753.20
 = +398.65 m²
 = -0.00 m²



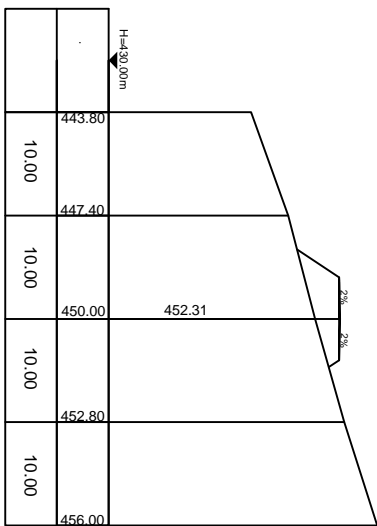
3/4
 . . . +1 + 723.20
 = +394.75 m²
 = -0.00 m²



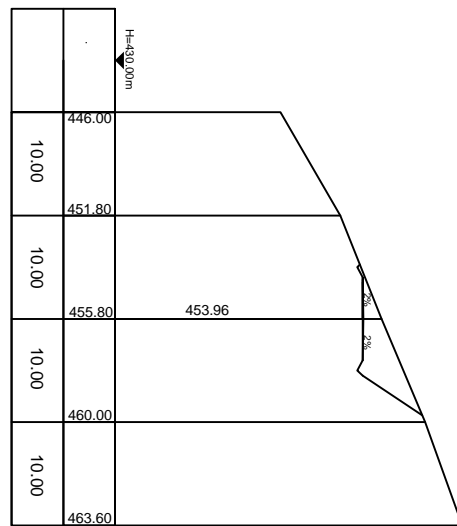
37
 . . . +1+813.20
 - +29.08 m²
 - -4.25 m²



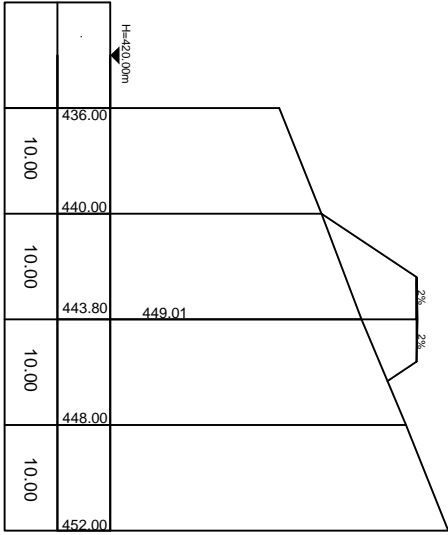
36
 . . . +1+783.20
 - +212.28 m²
 - -0.00 m²



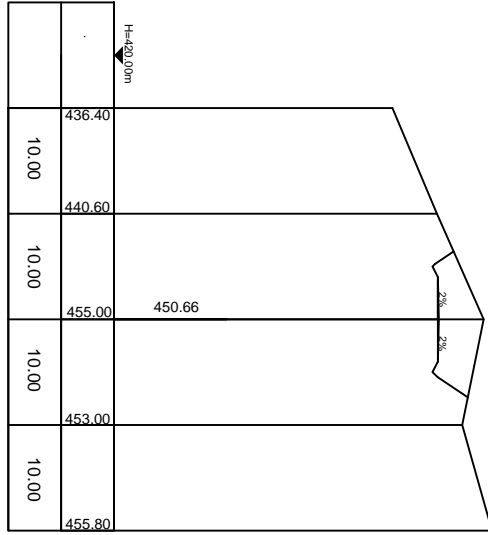
39
 . . . +1+873.20
 - +10.00 m²
 - -22.79 m²



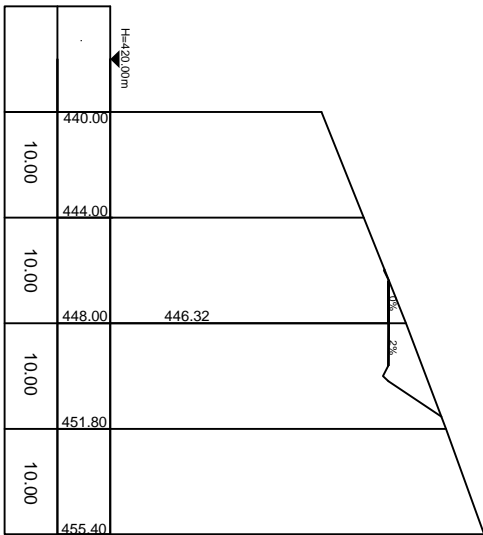
38
 . . . +1+843.20
 - +29.31 m²
 - -0.00 m²



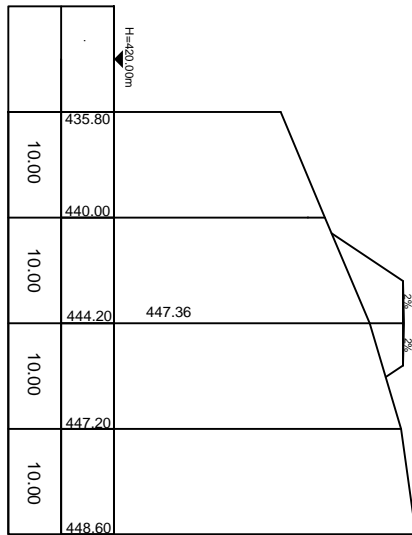
41
 . . . 1+933.20
 = +0.00 m²
 = +64.79 m²



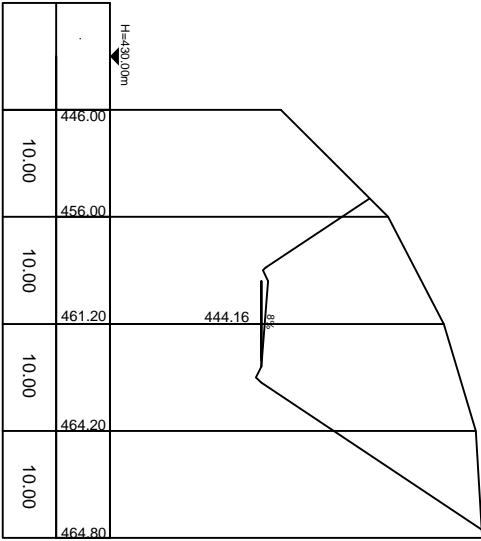
40
 . . . 1+903.20
 = +42.57 m²
 = -0.00 m²



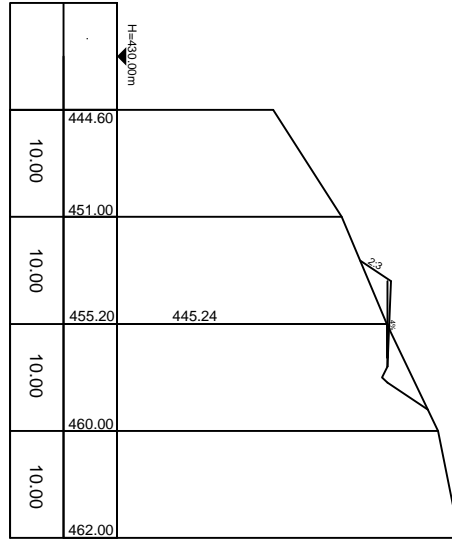
44
 . . . 1+982.20
 = +25.42 m²
 = -0.00 m²



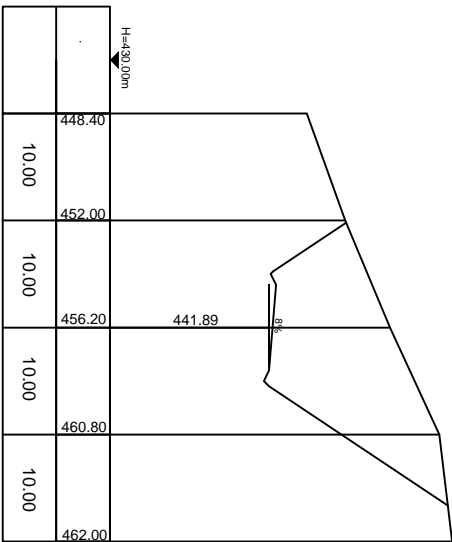
42
 . . . 1+963.20
 = +0.00 m²
 = -38.28 m²



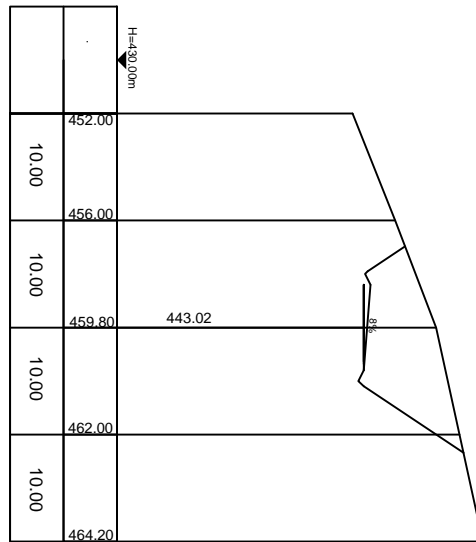
. . . 2+21.40
 = +357.84 m²
 = -0.00 m²



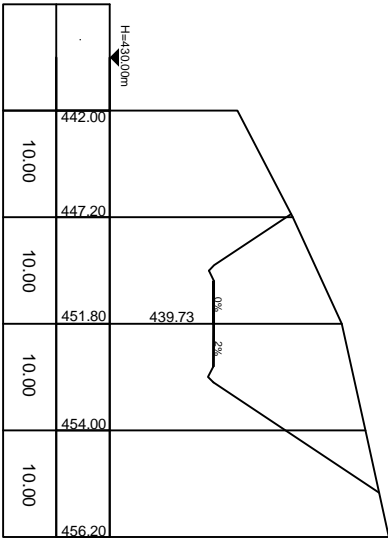
. . . 2+1.80
 = +10.35 m²
 = -6.38 m²



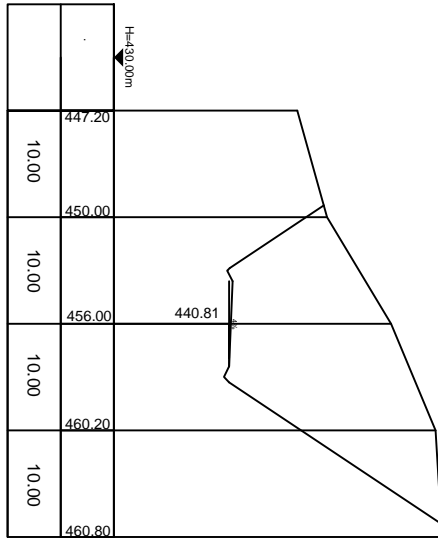
. . . 1+62.70
 = +222.31 m²
 = -0.00 m²



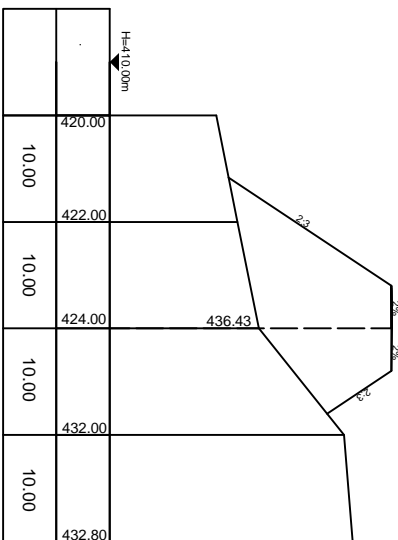
. . . 2+42.05
 = +98.02 m²
 = -0.00 m²



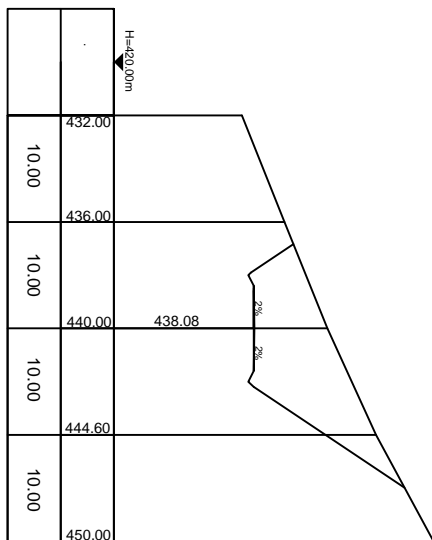
. . . 2+101.90
 = +221.16 m²
 = -0.00 m³



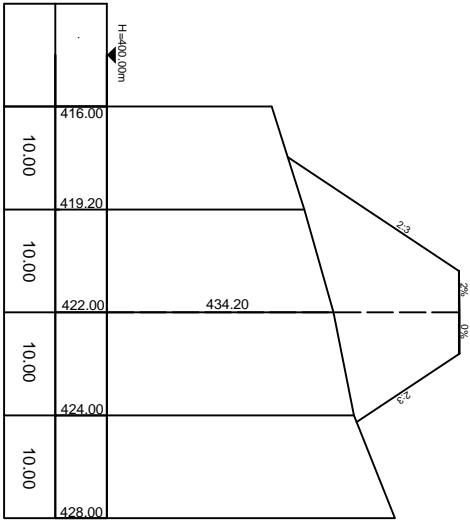
. . . 2+82.30
 = +317.59 m²
 = -0.00 m³



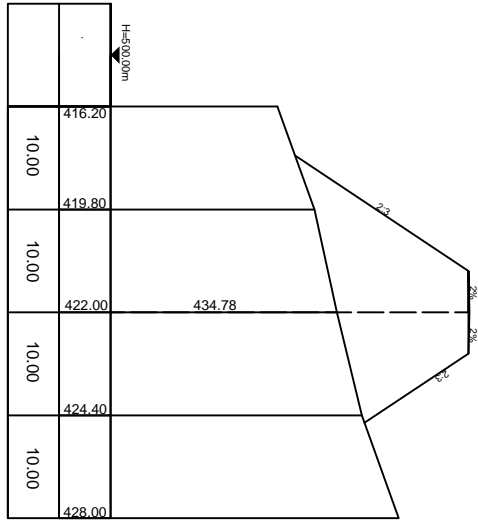
. . . 2+161.90
 = +180.48 m²
 = -0.00 m³



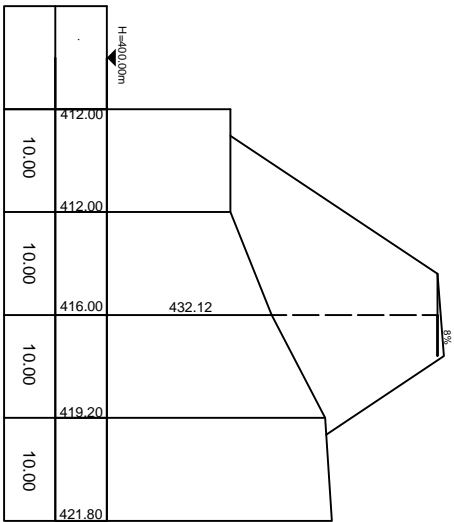
. . . 1+131.90
 = +129.13 m²
 = -0.00 m³



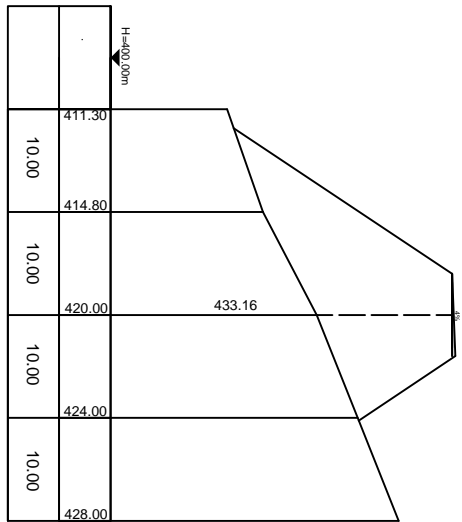
A5
 . . . 2+202.40
 = +0.00 m²
 = -209.25 m²



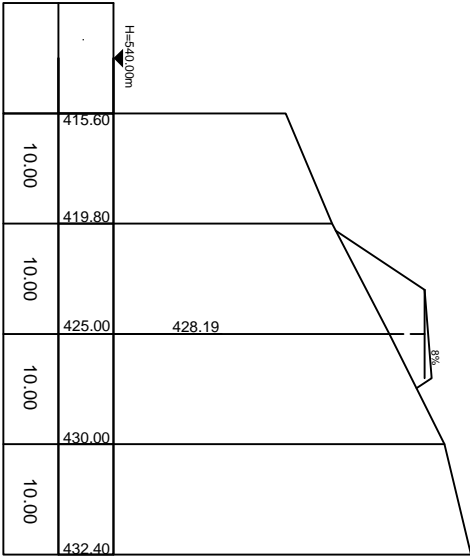
45
 . . . 2+191.90
 = +0.00 m²
 = -214.77 m²



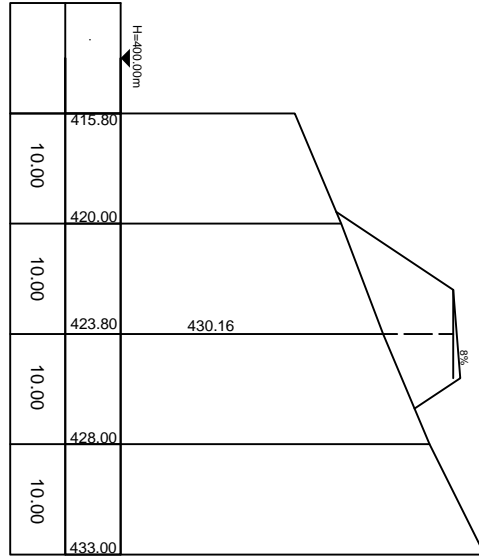
5
 . . . 2+240.22
 = +0.00 m²
 = -311.51 m²



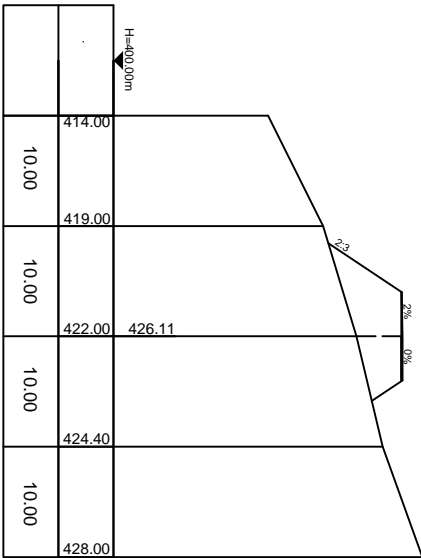
E5
 . . . 2+221.31
 = +0.00 m²
 = -257.01 m²



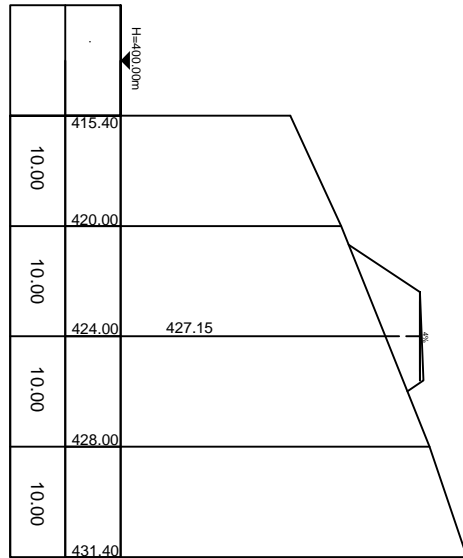
5
 . . . 2+311.74
 = +0.00 m²
 = -43.32 m²



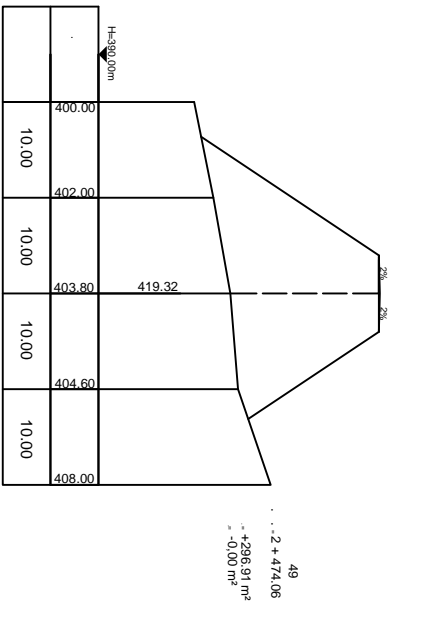
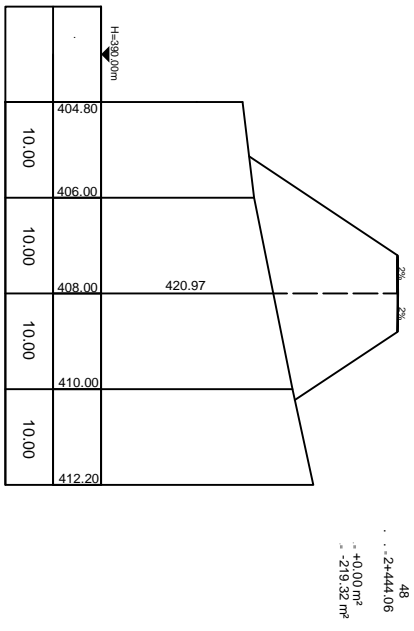
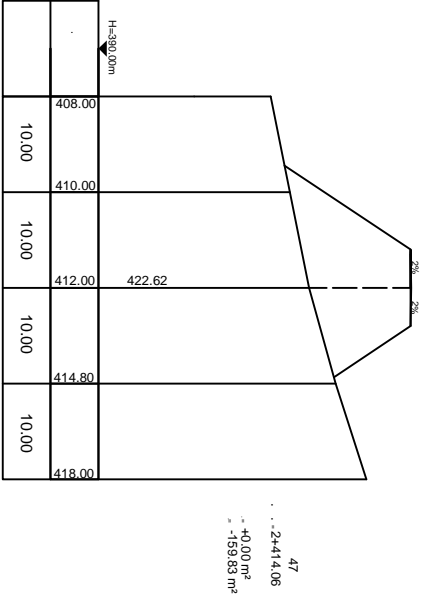
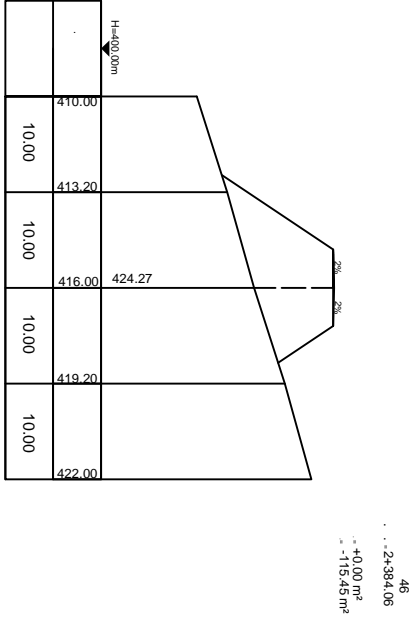
5
 . . . 2+275.98
 = +0.00 m²
 = -88.23 m²

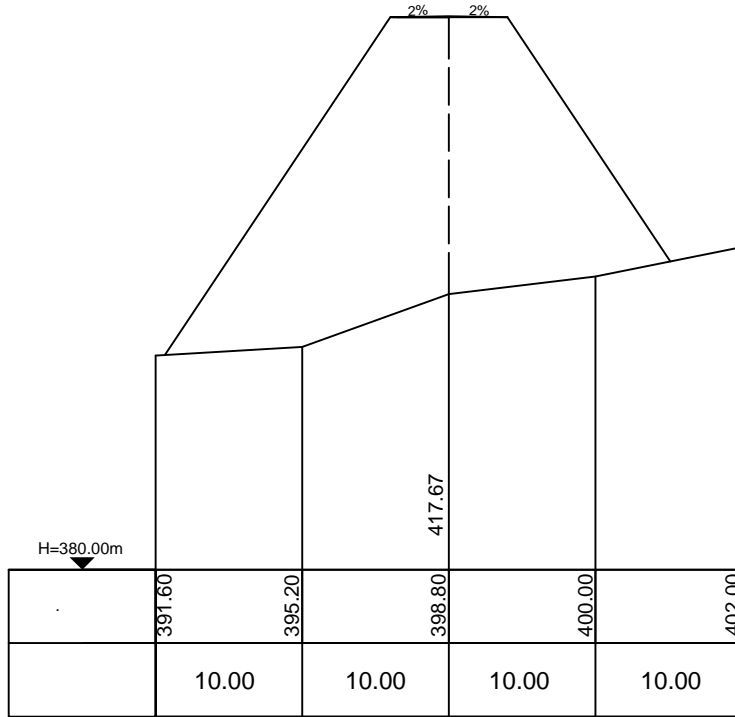


A5
 . . . 2+349.56
 = +0.00 m²
 = -48.42 m²



E5
 . . . 2+330.65
 = -40.00 m²
 = -37.65 m²





B
 . . = 2+504.06
 . = +0.00 m²
 . = -420.46 m²

-

μ μ μ μ μ μ μ

ΜΕΘΟΔΟΣ ΜΕΣΩΝ ΕΠΙΦΑΝΕΙΩΝ

Α) ΥΠΟΛΟΓΙΣΜΟΣ ΟΓΚΟΥ ΕΚΧΩΜΑΤΩΝ

$$\begin{aligned}
 V = & \frac{E_{20} + E_{21}}{2} \times \lambda + \frac{E_{21} + E_{A1}}{2} \times \lambda + \frac{E_{A1} + E_{E1}}{2} \times \lambda + \\
 & + \frac{E_{E1} + E_{Q1}}{2} \times \lambda + \frac{E_{Q1} + E_{\Delta1}}{2} \times \lambda + \frac{E_{\Delta1} + E_{D1}}{2} \times \lambda + \\
 & + \frac{E_{D1} + E_{E1}}{2} \times \lambda + \frac{E_{E1} + E_{A'1}}{2} \times \lambda + \frac{E_{A'1} + E_{22}}{2} \times \lambda + \\
 & + \frac{E_{22} + E_{23}}{2} \times \lambda + \frac{E_{23} + E_{24}}{2} \times \lambda + \frac{E_{24} + E_{25}}{2} \times \lambda + \\
 & + \frac{E_{25} + E_{26}}{2} \times \lambda + \frac{E_{26} + E_{27}}{2} \times \lambda + \frac{E_{27} + E_{A2}}{2} \times \lambda + \\
 & + \frac{E_{A2} + E_{E2}}{2} \times \lambda + \frac{E_{E2} + E_{Q2}}{2} \times \lambda + \frac{E_{Q2} + E_{\Delta2}}{2} \times \lambda + \\
 & + \frac{E_{\Delta2} + E_{D2}}{2} \times \lambda + \frac{E_{D2} + E_{E2}}{2} \times \lambda + \frac{E_{E2} + E_{A'2}}{2} \times \lambda + \\
 & + \frac{E_{A'2} + E_{28}}{2} \times \lambda + \frac{E_{28} + E_{29}}{2} \times \lambda + \frac{E_{29} + E_{30}}{2} \times \lambda + \\
 & + \frac{E_{30} + E_{31}}{2} \times \lambda + \frac{E_{31} + E_{32}}{2} \times \lambda + \frac{E_{32} + E_{33}}{2} \times \lambda + \\
 & + \frac{E_{33} + E_{A3}}{2} \times \lambda + \frac{E_{A3} + E_{E3}}{2} \times \lambda + \frac{E_{E3} + E_{Q3}}{2} \times \lambda + \\
 & + \frac{E_{Q3} + E_{\Delta3}}{2} \times \lambda + \frac{E_{\Delta3} + E_{D3}}{2} \times \lambda + \frac{E_{D3} + E_{E3}}{2} \times \lambda + \\
 & + \frac{E_{E3} + E_{A'3}}{2} \times \lambda + \frac{E_{A'3} + E_{34}}{2} \times \lambda + \frac{E_{34} + E_{35}}{2} \times \lambda + \frac{E_{35} + E_{36}}{2} \times \lambda + \\
 & + \frac{E_{36} + E_{37}}{2} \times \lambda + \frac{E_{37} + E_{38}}{2} \times \lambda + \frac{E_{38} + E_{39}}{2} \times \lambda + \\
 & + \frac{E_{39} + E_{40}}{2} \times \lambda + \frac{E_{40} + E_{41}}{2} \times \lambda + \frac{E_{41} + E_{42}}{2} \times \lambda + \frac{E_{42} + E_{A4}}{2} \times \lambda + \\
 & + \frac{E_{A4} + E_{E4}}{2} \times \lambda + \frac{E_{E4} + E_{D4}}{2} \times \lambda + \frac{E_{D4} + E_{\Delta4}}{2} \times \lambda + \\
 & + \frac{E_{\Delta4} + E_{Q4}}{2} \times \lambda + \frac{E_{Q4} + E_{E'4}}{2} \times \lambda + \frac{E_{E'4} + E_{A'4}}{2} \times \lambda + \\
 & + \frac{E_{A'4} + E_{43}}{2} \times \lambda + \frac{E_{43} + E_{44}}{2} \times \lambda =
 \end{aligned}$$

VEKX=	<u>0,000</u>	+	<u>284,120</u>	x	<u>30,000</u>	+	<u>284,120</u>	+	<u>276,510</u>	x	<u>29,500</u>	+
	2				2		2		2			
+	<u>276,510</u>	+	<u>194,040</u>	x	<u>18,910</u>	+	<u>194,040</u>	+	<u>210,830</u>	x	<u>18,910</u>	+
	2						2		2			
+	<u>210,830</u>	+	<u>408,770</u>	x	<u>34,500</u>	+	<u>408,770</u>	351	<u>351,360</u>	x	<u>34,500</u>	+
	2						2		2			
+	<u>351,360</u>	+	<u>323,820</u>	x	<u>18,910</u>	+	<u>323,820</u>	+	<u>300,140</u>	x	<u>18,910</u>	+
	2						2		2			
+	<u>330,140</u>	+	<u>257,900</u>	x	<u>30,000</u>	+	<u>257,900</u>	+	<u>237,540</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>237,540</u>	+	<u>259,250</u>	x	<u>30,000</u>	+	<u>259,250</u>	+	<u>189,480</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>189,480</u>	+	<u>259,900</u>	x	<u>30,000</u>	+	<u>259,900</u>	+	<u>123,770</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>123,770</u>	+	<u>337,360</u>	x	<u>27,500</u>	+	<u>337,360</u>	+	<u>360,270</u>	x	<u>18,000</u>	+
	2						2		2			
+	<u>360,270</u>	+	<u>332,450</u>	x	<u>18,000</u>	+	<u>332,450</u>	+	<u>262,430</u>	x	<u>44,040</u>	+
	2						2		2			
+	<u>262,430</u>	+	<u>396,040</u>	x	<u>44,040</u>	+	<u>396,040</u>	+	<u>412,150</u>	x	<u>18,000</u>	+
	2						2		2			
+	<u>412,150</u>	+	<u>456,180</u>	x	<u>18,000</u>	+	<u>456,180</u>	+	<u>437,800</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>437,800</u>	+	<u>447,240</u>	x	<u>30,000</u>	+	<u>447,240</u>	+	<u>447,100</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>438,750</u>	+	<u>369,430</u>	x	<u>30,000</u>	+	<u>369,430</u>	+	<u>287,680</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>287,680</u>	+	<u>312,740</u>	x	<u>21,50</u>	+	<u>312,74</u>	+	<u>314,56</u>	x	<u>18,91</u>	+
	2						2		2			
+	<u>314,56</u>	+	<u>342,150</u>	x	<u>18,910</u>	+	<u>342,150</u>	+	<u>321,720</u>	x	<u>35,130</u>	+
	2						2		2			
+	<u>321,720</u>	+	<u>439,770</u>	x	<u>35,130</u>	+	<u>439,770</u>	+	<u>297,400</u>	x	<u>18,910</u>	+
	2						2		2			
+	<u>297,400</u>	+	<u>331,850</u>	x	<u>18,910</u>	+	<u>331,850</u>	+	<u>394,750</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>394,750</u>	+	<u>398,650</u>	x	<u>30,000</u>	+	<u>398,650</u>	+	<u>212,280</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>212,280</u>	+	<u>29,080</u>	x	<u>30,000</u>	+	<u>29,080</u>	+	<u>29,310</u>	x	<u>30,000</u>	+
	2						2		2			
+	<u>29,310</u>	+	<u>0,000</u>	x	<u>30,000</u>	+	<u>0,000</u>	+	<u>42,570</u>	x	<u>30,000</u>	+
	2				2		2		2		2	
+	<u>42,570</u>	+	<u>0,000</u>	x	<u>30,000</u>	+	<u>0,000</u>	+	<u>25,420</u>	x	<u>19,000</u>	+
	2				2		2		2		2	
+	<u>25,42</u>	+	<u>10,35</u>	x	<u>19,600</u>	+	<u>10,35</u>	+	<u>357,84</u>	x	<u>19,600</u>	+
	2						2		2			

+	<u>357,80</u>	+	<u>98,02</u>	x	20,650	+	<u>98,020</u>	+	<u>222,310</u>	x	20,650	+
	2						2					
+	<u>222,310</u>	+	<u>317,590</u>	x	19,600	+	<u>317,590</u>	+	<u>221,160</u>	x	19,600	+
	2						2					
+	<u>221,160</u>	+	<u>129,130</u>	x	30,000	+	<u>129,130</u>	+	<u>0,000</u>	x	<u>30,000</u>	=
	2						2				2	
=	2.130,90	+	8.269,29	+	4.449,05	+	3.828,05	+	10.688,10	+	13.112,24	+
+	6.383,83	+	6.183,19	+	8.820,60	+	7.431,60	+	7.451,85	+	6.730,95	+
+	6.740,70	+	5.755,05	+	6.340,54	+	6.278,67	+	6.234,48	+	13.099,26	+
+	14.499,51	+	7.273,71	+	7.814,97	+	13.409,70	+	13.275,60	+	13.415,10	+
+	12.122,70	+	9.856,65	+	6.349,44	+	5.931,12	+	6.209,19	+	11.660,88	+
+	13.375,57	+	6.969,94	+	5.949,56	+	10.899,00	+	11.901,00	+	3.184,20	+
+	3.620,40	+	875,85	+	219,83	+	319,28	+	319,28	+	120,75	+
+	350,55	+	3.608,26	+	4.706,34	+	3.307,41	+	5.291,02	+	5.279,75	+
+	5.254,35	+	968,48	=								

V = 332033,1

ΜΕΘΟΔΟΣ ΜΕΣΩΝ ΕΠΙΦΑΝΕΙΩΝ

Α) ΥΠΟΛΟΓΙΣΜΟΣ ΟΓΚΟΥ ΕΠΙΧΩΜΑΤΩΝ

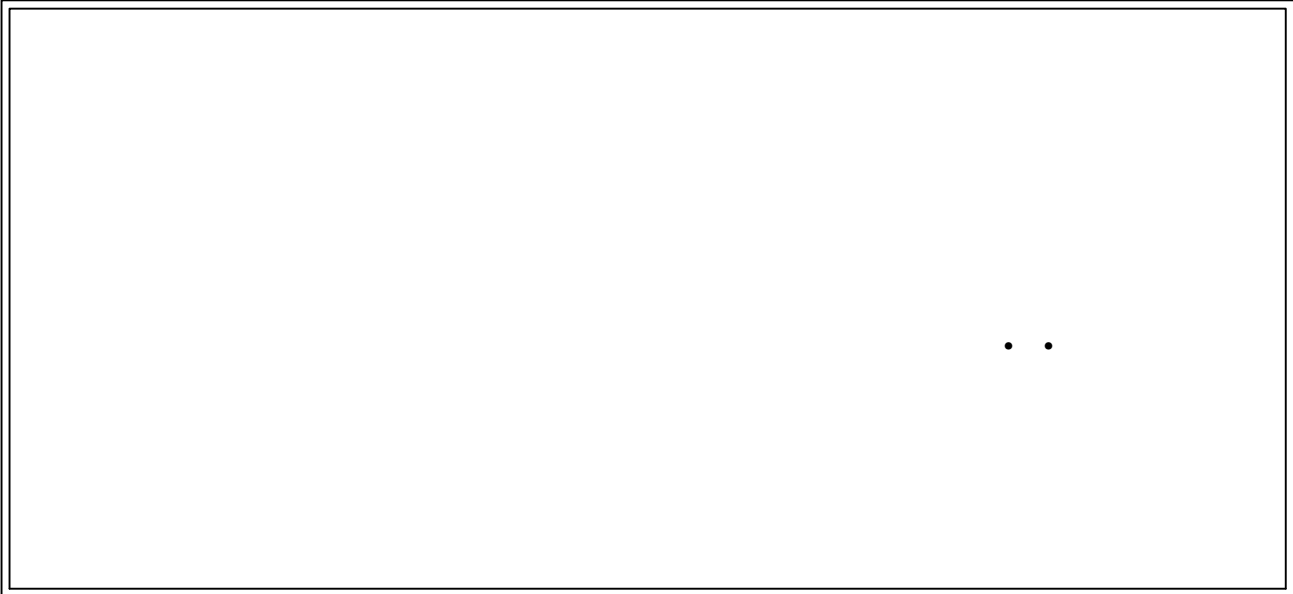
$$\begin{aligned} V &= \frac{E_A + E_1}{2} \times \lambda + \frac{E_1 + E_2}{2} \times \lambda + \frac{E_2 + E_3}{2} \times \lambda + \\ &+ \frac{E_3 + E_4}{2} \times \lambda + \frac{E_4 + E_5}{2} \times \lambda + \frac{E_5 + E_6}{2} \times \lambda + \\ &+ \frac{E_6 + E_7}{2} \times \lambda + \frac{E_7 + E_8}{2} \times \lambda + \frac{E_8 + E_9}{2} \times \lambda + \\ &+ \frac{E_9 + E_{10}}{2} \times \lambda + \frac{E_{10} + E_{11}}{2} \times \lambda + \frac{E_{11} + E_{A0}}{2} \times \lambda + \\ &+ \frac{E_{A0} + E_{E0}}{2} \times \lambda + \frac{E_{E0} + E_{Q0}}{2} \times \lambda + \frac{E_{Q0} + E_{\Delta 0}}{2} \times \lambda + \\ &+ \frac{E_{\Delta 0} + E_{Q'0}}{2} \times \lambda + \frac{E_{Q'0} + E_{E'0}}{2} \times \lambda + \frac{E_{E'0} + E_{A'0}}{2} \times \lambda + \\ &+ \frac{E_{A'0} + E_{12}}{2} \times \lambda + \frac{E_{12} + E_{13}}{2} \times \lambda + \frac{E_{13} + E_{14}}{2} \times \lambda + \\ &+ \frac{E_{14} + E_{15}}{2} \times \lambda + \frac{E_{15} + E_{16}}{2} \times \lambda + \frac{E_{16} + E_{17}}{2} \times \lambda + \\ &+ \frac{E_{17} + E_{18}}{2} \times \lambda + \frac{E_{18} + E_{19}}{2} \times \frac{\lambda}{2} + \frac{E_{19} + E_{20}}{2} \times \lambda + \\ &+ \frac{E_{20} + E_{21}}{2} \times \frac{\lambda}{2} + \frac{E_{26} + E_{27}}{2} \times \frac{\lambda}{2} + \frac{E_{27} + E_{28}}{2} \times \frac{\lambda}{2} + \\ &+ \frac{E_{28} + E_{29}}{2} \times \frac{\lambda}{2} + \frac{E_{29} + E_{40}}{2} \times \lambda + \frac{E_{40} + E_{41}}{2} \times \lambda + \\ &+ \frac{E_{41} + E_{42}}{2} \times \lambda + \frac{E_{42} + E_{A4}}{2} \times \frac{\lambda}{2} + \frac{E_{A4} + E_{E4}}{2} \times \frac{\lambda}{2} + \\ &+ \frac{E_{E4} + E_{Q4}}{2} \times \frac{\lambda}{2} + \frac{E_{43} + E_{A5}}{2} \times \lambda + \frac{E_{A5} + E_{E5}}{2} \times \lambda + \\ &+ \frac{E_{E5} + E_{Q5}}{2} \times \lambda + \frac{E_{Q5} + E_{\Delta 5}}{2} \times \lambda + \frac{E_{\Delta 5} + E_{Q'5}}{2} \times \lambda + \\ &+ \frac{E_{Q'5} + E_5}{2} \times \lambda + \frac{E_{E'5} + E_{A5}}{2} \times \lambda + \frac{E_{A5} + E_{48}}{2} \times \lambda + \\ &+ \frac{E_{48} + E_{47}}{2} \times \lambda + \frac{E_{47} + E_{48}}{2} \times \lambda + \frac{E_{48} + E_{49}}{2} \times \lambda + \\ &+ \frac{E_{49} + E_B}{2} \times \lambda = \end{aligned}$$

VEPIX=	<u>587,25</u>	+	<u>458,43</u>	x	30,000	+	<u>458,43</u>	+	<u>475,16</u>	x	30,000	+
	2						2					
+	<u>475,16</u>	+	<u>379,56</u>	x	30,000	+	<u>379,56</u>	+	<u>498,77</u>	x	30,000	+
	2						2					
+	<u>498,77</u>	+	<u>424,80</u>	x	30,000	+	<u>424,80</u>	+	<u>565,88</u>	x	30,000	+
	2						2					
+	<u>565,88</u>	+	<u>556,65</u>	x	30,000	+	<u>556,65</u>	+	<u>532,08</u>	x	30,000	+
	2						2					
+	<u>532,08</u>	+	<u>584,64</u>	x	30,000	+	<u>584,64</u>	+	<u>423,73</u>	x	30,000	+
	2						2					
+	<u>423,73</u>	+	<u>511,85</u>	x	30,000	+	<u>511,85</u>	+	<u>565,68</u>	x	23,500	+
	2						2					
+	<u>565,68</u>	+	<u>524,86</u>	x	18,910	+	<u>524,86</u>	+	<u>535,77</u>	x	18,910	+
	2						2					
+	<u>535,77</u>	+	<u>419,61</u>	x	37,640	+	<u>419,61</u>	+	<u>414,30</u>	x	37,640	+
	2						2					
+	<u>414,30</u>	+	<u>298,85</u>	x	18,910	+	<u>298,85</u>	+	<u>268,35</u>	x	18,910	+
	2						2					
+	<u>268,35</u>	+	<u>201,26</u>	x	30,000	+	<u>201,26</u>	+	<u>210,16</u>	x	30,000	+
	2						2					
+	<u>210,16</u>	+	<u>278,32</u>	x	30,000	+	<u>278,32</u>	+	<u>284,19</u>	x	30,000	+
	2						2					
+	<u>284,19</u>	+	<u>270,20</u>	x	30,000	+	<u>270,20</u>	+	<u>257,77</u>	x	30,000	+
	2						2					
+	<u>257,77</u>	+	<u>98,01</u>	x	30,000	+	<u>98,01</u>	+	<u>24,23</u>	x	30,000	+
	2						2					
+	<u>24,23</u>	+	<u>41,82</u>	x	30,000	+	<u>41,82</u>	+	<u>0,00</u>	x	<u>30,000</u>	+
	2						2			2		
+	<u>0,00</u>	+	<u>4,25</u>	x	<u>30,000</u>	+	<u>4,25</u>	+	<u>0,00</u>	x	<u>30,000</u>	+
	2				2		2			2		
+	<u>0,00</u>	+	<u>22,79</u>	x	<u>30,000</u>	+	<u>22,79</u>	+	<u>0,00</u>	x	<u>30,000</u>	+
	2				2		2			2		
+	<u>0,00</u>	+	<u>64,79</u>	x	<u>30,000</u>	+	<u>64,79</u>	+	<u>38,28</u>	x	<u>30,000</u>	+
	2				2		2			2		
+	<u>38,28</u>	+	<u>0,00</u>	x	<u>19,000</u>	+	<u>0,00</u>	+	<u>6,36</u>	x	<u>19,600</u>	+
	2				2		2			2		
+	<u>6,36</u>	+	<u>0,00</u>	x	<u>19,600</u>	+	<u>0,00</u>	+	<u>180,48</u>	x	<u>30,000</u>	+
	2				2		2			2		

VEΠIX=	$\frac{587,25}{2} + 458,43$	x	30,000	+	$\frac{458,43}{2} + 475,16$	x	30,000	+
+	$\frac{475,16}{2} + 379,56$	x	30,000	+	$\frac{379,56}{2} + 498,77$	x	30,000	+
+	$\frac{498,77}{2} + 424,80$	x	30,000	+	$\frac{424,80}{2} + 565,88$	x	30,000	+
+	$\frac{565,88}{2} + 556,65$	x	30,000	+	$\frac{556,65}{2} + 532,08$	x	30,000	+
+	$\frac{532,08}{2} + 584,64$	x	30,000	+	$\frac{584,64}{2} + 423,73$	x	30,000	+
+	$\frac{423,73}{2} + 511,85$	x	30,000	+	$\frac{511,85}{2} + 565,68$	x	23,500	+
+	$\frac{565,68}{2} + 524,86$	x	18,910	+	$\frac{524,86}{2} + 535,77$	x	18,910	+
+	$\frac{535,77}{2} + 419,61$	x	37,640	+	$\frac{419,61}{2} + 414,30$	x	37,640	+
+	$\frac{414,30}{2} + 298,85$	x	18,910	+	$\frac{298,85}{2} + 268,35$	x	18,910	+
+	$\frac{268,35}{2} + 201,26$	x	30,000	+	$\frac{201,26}{2} + 210,16$	x	30,000	+
+	$\frac{210,16}{2} + 278,32$	x	30,000	+	$\frac{278,32}{2} + 284,19$	x	30,000	+
+	$\frac{284,19}{2} + 270,20$	x	30,000	+	$\frac{270,20}{2} + 257,77$	x	30,000	+
+	$\frac{257,77}{2} + 98,01$	x	30,000	+	$\frac{98,01}{2} + 24,23$	x	30,000	+
+	$\frac{24,23}{2} + 41,82$	x	30,000	+	$\frac{41,82}{2} + 0,00$	x	$\frac{30,000}{2}$	+
+	$\frac{0,00}{2} + 4,25$	x	$\frac{30,000}{2}$	+	$\frac{4,25}{2} + 0,00$	x	$\frac{30,000}{2}$	+
+	$\frac{0,00}{2} + 22,79$	x	$\frac{30,000}{2}$	+	$\frac{22,79}{2} + 0,00$	x	$\frac{30,000}{2}$	+
+	$\frac{0,00}{2} + 64,79$	x	$\frac{30,000}{2}$	+	$\frac{64,79}{2} + 38,28$	x	$\frac{30,000}{2}$	+
+	$\frac{38,28}{2} + 0,00$	x	$\frac{19,000}{2}$	+	$\frac{0,00}{2} + 6,36$	x	$\frac{19,600}{2}$	+
+	$\frac{6,36}{2} + 0,00$	x	$\frac{19,600}{2}$	+	$\frac{0,00}{2} + 180,48$	x	$\frac{30,000}{2}$	+

+	$\frac{180,48 + 214,77}{2}$	x	30,000	+	$\frac{214,77 + 209,25}{2}$	x	10,500	+				
+	$\frac{209,25 + 257,01}{2}$	x	18,910	+	$\frac{257,01 + 311,51}{2}$	x	18,910	+				
+	$\frac{311,51 + 88,23}{2}$	x	35,760	+	$\frac{88,23 + 43,32}{2}$	x	35,760	+				
+	$\frac{43,32 + 37,65}{2}$	x	18,910	+	$\frac{37,65 + 48,42}{2}$	x	18,910	+				
+	$\frac{48,42 + 115,45}{2}$	x	34,500	+	$\frac{115,45 + 159,83}{2}$	x	30,000	+				
+	$\frac{159,83 + 239,32}{2}$	x	30,000	+	$\frac{239,32 + 296,91}{2}$	x	30,000	+				
+	$\frac{296,91 + 420,46}{2}$	x	30,000	=								
=	15.685,20	+	14.003,85	+	12.820,80	+	13.174,95	+	13.853,55	+	14.860,20	+
+	16.837,95	+	16.330,95	+	16.750,80	+	15.125,55	+	14.033,70	+	12.660,98	+
+	10.311,06	+	10.028,26	+	17.980,25	+	15.694,19	+	6.742,83	+	5.362,88	+
+	7.044,15	+	6.171,30	+	7.327,20	+	8.437,65	+	8.315,85	+	7.919,55	+
+	5.336,70	+	1.833,60	+	990,75	+	313,65	+	1,06	+	1,06	+
+	170,93	+	170,93	+	485,93	+	1.471,05	+	181,83	+	62,33	+
+	62,33	+	1.353,60	+	5.928,75	+	2.226,11	+	4.408,49	+	5.375,36	+
+	7.147,35	+	2.352,11	+	765,57	+	813,79	+	1.549,39	+	4.129,20	+
+	5.987,25	+	8.043,45	+	10.760,55	=						

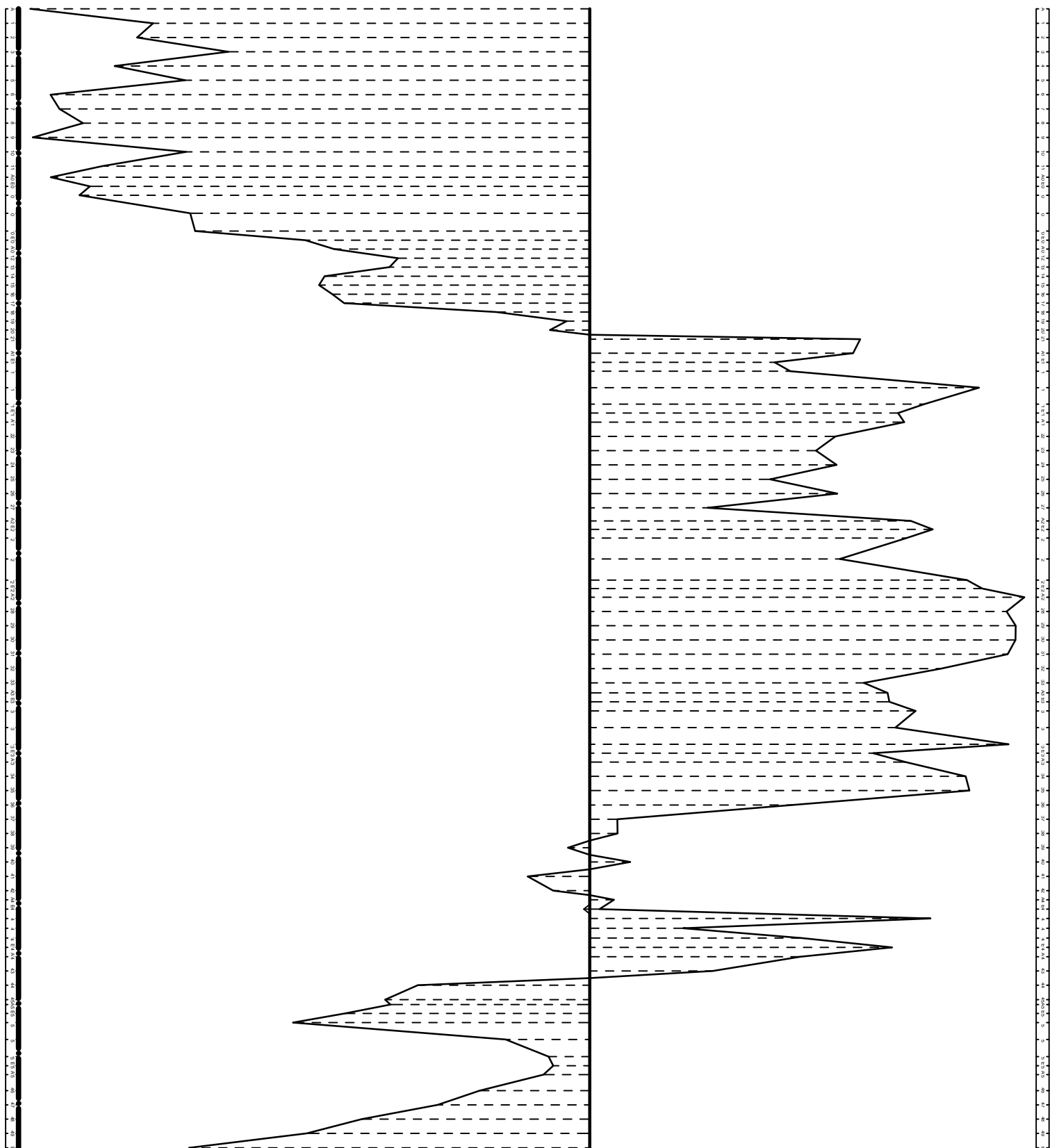
V = 359398,8



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μ	μ	.
	1cm=20.00m ² 1:5000	04
	μ μ	2016
		-

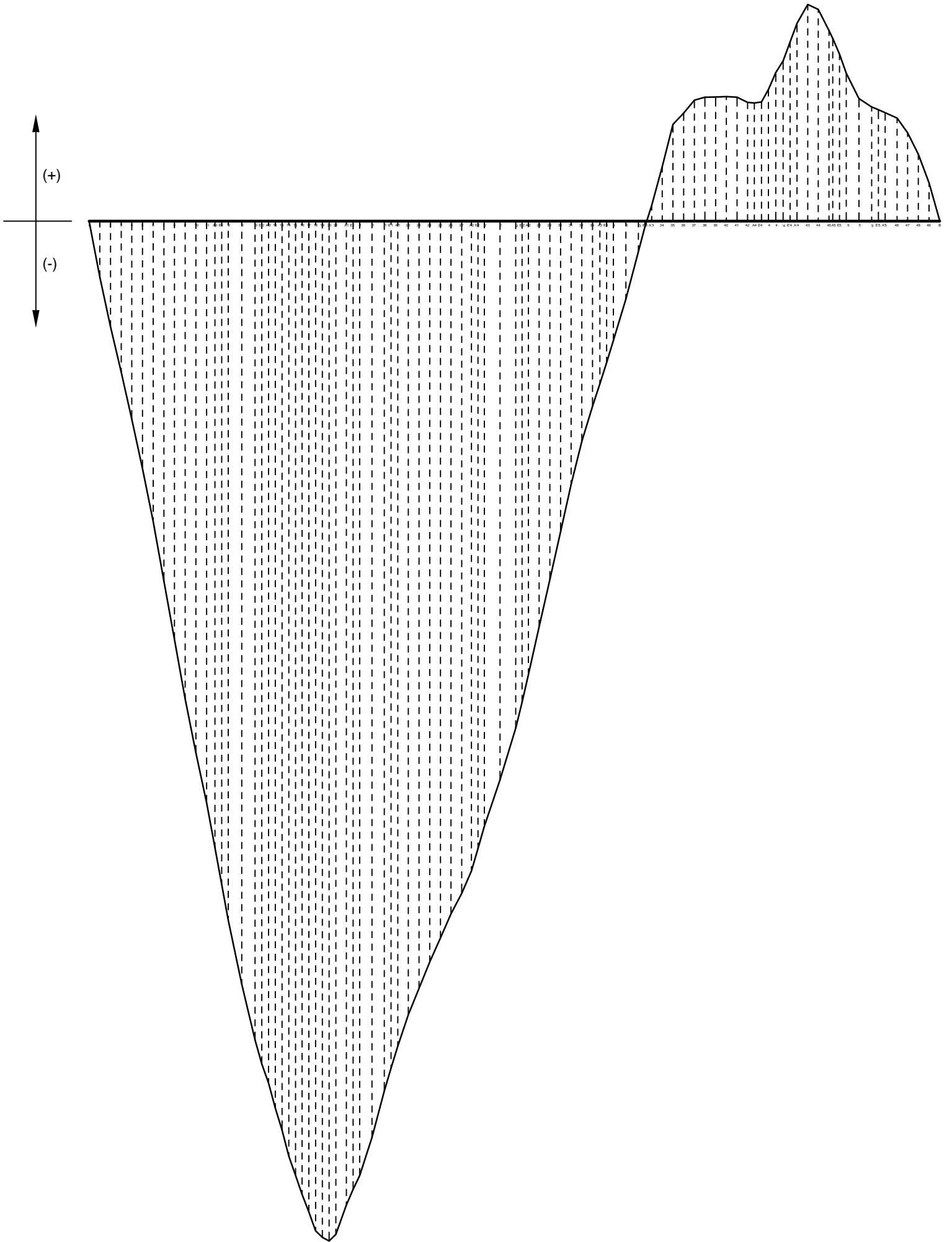


- **BRUCKNER**

<p>• •</p>

	<p>⋮</p> <p>,</p>

μ	μ	.	
<p>BRUCKNER</p>	<p>1cm=5.000m³</p> <p>1:5000</p>	<p>05</p>	
	μ μ	2016	
	-		



1. . . . , 2001, , , .
2. . . . , 2006, μ , , .
3. . . . , 2005, : , , .
University Studio Press μ , .
4. . . . , 2001, μ () -
(3) file:///C:/Users/user/Downloads/omoe_3_x.pdf
5. . . . , 2001, μ (μ) - ,
(2) http://www.ggde.gr/dmdocuments/omoe_2_d.pdf
6. μ , , μ , . . .
7. ., μ - .