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中華人民共和國

交通部公路局設計院

土方計算表

路基寬度：10公尺

第七冊



一九五六年

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路基寬為10公尺的土方計算表說明書

本冊刊載路基寬為10公尺的路堤和路塹土方計算表；路基橫断面所採用的一切因素，都是符合中華人民共和國公路工程設計准則的規定（以下簡稱設計准則），修筑路基所需的土方工程數量按本冊所載有的計算表計算，其公式為：

$$D = F_{cp} \cdot L$$

式中：

D ——所求的該段路基土方工程數量，以立方公尺計；

F_{cp} ——路基橫断面的平均面積，以平方公尺計；

該断面是按平均工作標高計算，其公式為：

$$H_{cp} = \frac{H_1 + H_2}{2}$$

式中：

$H_1 + H_2$ ——兩相鄰断面的工作標高（路堤高或路塹深，以公尺計）之和；

L ——需求出土方數量路段的路基長度（路堤或路塹，以公尺計）；

引用公式所求得的土方工程數量較實際數量小，當 H_1 和 H_2 高差小於1公尺時，其差數很小，在計算土方時，可以不計。當高差 $(H_1 - H_2) > 1$ 公尺時，土方修正數應按修正數專冊中所載修正數計算表計算。

當計算路堤和路塹土方工程數量時，採用梯形的路基橫断面來計算。其梯形上部是以通過現有路基頂邊所畫的水平綫為限。不計算路槽的修正數，而路槽修正數按另外修正數專冊所載的計算表求得。

本冊包括下列三個土方計算表：

(1) 路堤土方計算表；

(2) 積雪地區開敞式淺挖路塹土方計算表；

(3) 標準式路塹土方計算表。

路堤和開敞式路塹土方計算表中，列有平均工作標高現成的數值，這些數值的範圍見表的頭一部份。

為了使用計算表方便起見，表中不採用公式中所用的平均工作標高（ H_{cp} ），而採用工作標高的和（ $H_1 + H_2$ ）。為了按計算公式演算表列的土方工程數量，而需要把表上所列的工作標高和（ $H_1 + H_2$ ）用 $\div$ 除，其公式為：

$$H_{cp} = \frac{H_1 + H_2}{2}$$

在路堤和開敞式路塹土方計算表（表1、2、3、4、5、6、7）中，工作標高和（ $H_1 + H_2$ ）的

數值間隔為一公分，而在標準式路塹土方計算表（表8、9、10、11）中，其數值間隔為2公分。所有的計算表中，都包括了該地段路基長（L）1—9公尺（其間隔為一公尺）的土方工程數量。

為了求出幾十公尺長度L的土方工程量，可以分別從表上查出適應於幾十公尺和幾公尺的數值，然後相加即得。因為表上所列的數值，都是以整公尺為單位，所以當長度為幾十公尺（或零點幾公尺）時，表上數值的小數點應向右（或向左）移一位。

路基橫斷面的面積（Fcp）按下面的所列的一些公式求得，這些公式所採用的符號是：

B——已筑路基的寬度以公尺計；

H——平均工作標高；

即 $\frac{H_1 + H_2}{2}$ ，以公尺計；

h——邊溝深，以公尺計；

c——邊溝底的寬度，以公尺計。

表1包括路堤高在1.0公尺以下，边坡定為1:3的路堤土方工程數量，這是符合設計準則§1405所規定的類型。

表2包括边坡定為1:15的路堤土方工程數量。在設計路基和依表計算路基土方工程量時。這種類型的橫斷面是最常見的情況。根據設計準則的規定，對於分布最廣的中等密實的土壤，路堤最大高度（平均工作標高）採用8.0公尺。

表1和表2中路堤橫斷面面積（Fcp）依下式求得：

$$F_{cp} = BH + mH^2$$

其橫斷面計算圖具有下列圖1的形式：

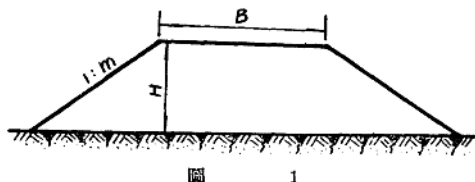


圖 1

表3、表4、表5包括平均工作標高在6.0公尺以上，边坡坡度為變坡，路堤边坡上部系數（m）採用 $m=1.5$ ，而下部系數（n）採用 $n=1.75$ 的路堤土方工程數量，這是符合設計準則§1405的規定。

在路堤最大高度部份，表3建議用粉砂土、粘土和粘土質垆母修筑路堤，而表4建議用砂質垆母和細粒砂土修筑。表5建議用中粒砂和粗粒砂土壤修筑路堤。

在編制表3、表4和表5時，路堤橫斷面的面積按下列公式求得：

$$F_{cp} = (Bh_1 + mh_1^2) + [B + 2mh_1 + n(H-h_1)](H-h_1)$$

其橫斷面計算圖具有下列圖2的形式：

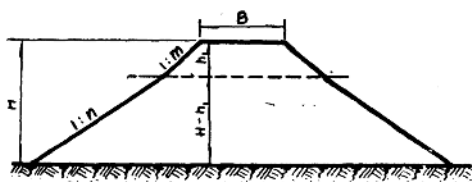


圖 2

表 6 和表 7 包括積雪地段開敞式淺挖路塹的土方工程數量。根據設計準則的規定，路塹边坡頂点和路肩頂点联接綫的坡度應不大於 1:10。根據這個原因，深為 0~1 公尺的路塹橫斷面面積 (F_{cp}) 依下式求得：

$$F_{cp} = (B + mh + C + 10)H + (10 + C)h$$

其路基橫斷面計算圖具有下列圖 3 的形式：

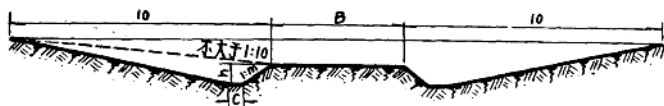


圖 3

對於深為 1.01—1.5 公尺的開敞式路塹，其橫斷面面積 (F_{cp}) 依下式求得：

$$F_{cp} = 10H^2 + (B + mh + C + 10h) \cdot H + ch$$

其路基橫斷面計算圖具有下列圖 4 的形式：

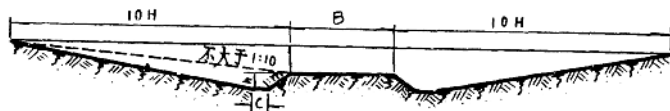


圖 4

在表 6 和表 7 的計算公式中，邊溝內坡係數以 M 字母表示。

在計算開敞式路塹土方時，邊溝深採用 0.4 公尺，而對於疏松的土壤則採用 0.8 公尺，對於中等密實的土壤和密實的土壤，邊溝深是根據設計準則的規定，並且考慮在積雪和積沙地段可能使用開敞式路塹的條件而決定。

表 8、表 9、表 10 和表 11 中包括深為 0—12 公尺的標準式路塹土方工程數量。根據路塹深到 12 公尺的條件來採用最大深度，土方工程數量可以依表計算。

深度大於 12 公尺的路塹是極個別的情況，則按特別公式計算。

對於所有常遇到的土壤來說，標準式路塹边坡坡度採用 1:1.5 邊溝內坡採用 1:1.5，這是

根据設計准則的規定，亦即最普通的一种类型。

标准式路堑横断面面积 (F_{cp}) 按下列計算公式求得：

$$F_{cp} = [B + 2c + 2h(m+n) + mH] \cdot H + [2ch + h^2(m+n)]$$

其横断面計算圖具有下列圖 5 的形式：

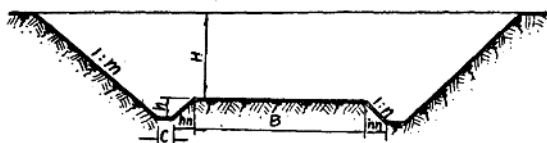


圖 5

根据現有設計准則的規定，标准式路堑边溝的深度採用 0.4~0.6~0.8 和 0.9 公尺。

为了介紹使用計算表的程序，下面举一个例子。

例如：求路堤地段的土方數量，其長为 84.53 公尺。边坡坡度为 1:1.5，横断面的工作标高以整个路堤地段兩端横断面的工作标高为限，等於 $H_1 = 3.15$ 公尺， $H_2 = 4.01$ 公尺。

找出工作标高和：

$$H_1 + H_2 = 3.15 + 4.01 = 7.16 \text{ 公尺}$$

在表 2 中查出：

当距离 $L = 80.00$ 公尺时，体积 $D = 4402.0$ 立方公尺

当距离 $L = 4.00$ 体积 $D = 220.1$ 立方公尺

当距离 $L = 0.50$ 体积 $D = 27.5$ 立方公尺

当距离 $L = 0.03$ 体积 $D = 1.7$ 立方公尺

当距离 $L = 84.53$ 公尺时，体积 $D = 4651$ 立方公尺

表 1

路 堤 土 方 表

B = 10M ;

H : 0 ~ 1M ;

m = 3

1.	1	2	3	4	5	6	7	8	9
$H_1 + H_2$									
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
01	0.050	0.100	0.150	0.200	0.250	0.300	0.350	0.400	0.450
02	0.100	0.200	0.300	0.400	0.500	0.600	0.700	0.800	0.900
03	0.150	0.300	0.450	0.600	0.750	0.900	1.050	1.200	1.300
04	0.201	0.402	0.603	0.804	1.005	1.206	1.407	1.608	1.809
0.05	0.252	0.504	0.753	1.008	1.260	1.512	1.764	2.016	2.268
06	0.303	0.606	0.909	1.212	1.515	1.818	2.121	2.424	2.727
07	0.354	0.708	1.062	1.416	1.770	2.124	2.478	2.832	3.186
08	0.405	0.810	1.215	1.620	2.025	2.430	2.835	3.240	3.645
09	0.456	0.912	1.368	1.824	2.280	2.735	3.192	3.648	4.104
0.10	0.508	1.016	1.524	2.032	2.540	3.048	3.556	4.064	4.572
11	0.559	1.118	1.677	2.233	2.795	3.354	3.913	4.472	5.031
12	0.611	1.222	1.833	2.444	3.055	3.616	4.277	4.888	5.499
13	0.663	1.326	1.989	2.652	3.315	3.978	4.641	5.304	5.967
14	0.715	1.430	2.145	2.860	3.575	4.290	5.005	5.720	6.435
0.15	0.767	1.534	2.301	3.068	3.835	4.602	5.369	6.136	6.903
16	0.819	1.638	2.457	3.278	4.095	4.914	5.733	6.552	7.371
17	0.872	1.744	2.616	3.488	4.390	5.232	6.104	6.976	7.848
18	0.924	1.848	2.772	3.696	4.620	5.544	6.468	7.392	8.316
19	0.977	1.954	2.931	3.908	4.865	5.882	6.839	7.816	8.793
0.20	1.030	2.060	3.090	4.120	5.150	6.180	7.210	8.240	9.270
21	1.083	2.168	3.249	4.332	5.415	6.498	7.581	8.664	9.747
22	1.136	2.272	3.408	4.544	5.680	6.816	7.952	9.088	10.224
23	1.190	2.380	3.570	4.760	5.950	7.140	8.330	9.520	10.710
24	1.243	2.486	3.729	4.972	6.215	7.458	8.701	9.944	11.187
0.25	1.297	2.594	3.891	5.188	6.485	7.782	9.079	10.376	11.673
26	1.351	2.702	4.053	5.404	6.755	8.105	9.457	10.808	12.159
27	1.405	2.810	4.215	5.620	7.025	8.430	9.835	11.240	12.645
28	1.459	2.918	4.377	5.836	7.295	8.751	10.213	11.672	13.131
29	1.513	3.026	4.539	6.052	7.565	9.078	10.591	12.104	13.617
0.30	1.568	3.136	4.704	6.272	7.640	9.408	10.976	12.544	14.112
31	1.622	3.244	4.866	6.488	8.110	9.732	11.354	12.976	14.598
32	1.677	3.354	5.031	6.708	8.385	10.032	11.739	13.416	15.093
33	1.732	3.464	5.196	6.928	8.650	10.392	12.124	13.856	15.588
34	1.787	3.574	5.361	7.148	8.935	10.722	12.509	14.295	16.083

表 1 (續)

L	1	2	3	4	5	6	7	8	9
$H_1 + H_2$									
0.35	1.842	3.684	5.528	7.368	9.210	11.052	12.894	14.736	16.578
36	1.897	3.794	5.691	7.588	9.485	11.382	13.279	15.176	17.073
37	1.953	3.906	5.859	7.812	9.765	11.718	13.671	15.624	17.577
38	2.008	4.016	6.024	8.032	10.040	12.048	14.056	16.064	18.072
39	2.064	4.128	6.192	8.256	10.320	12.384	14.448	16.512	18.576
0.40	2.120	4.240	6.360	8.480	10.600	12.720	14.840	16.960	19.080
41	2.176	4.352	6.528	8.704	10.880	13.056	15.232	17.408	19.584
42	2.232	4.464	6.696	8.928	11.160	13.392	15.624	17.856	20.088
43	2.289	4.578	6.867	9.156	11.445	13.734	16.023	18.312	20.601
44	2.345	4.690	7.035	9.380	11.725	14.070	16.415	18.760	21.105
0.45	2.402	4.804	7.206	9.608	12.010	14.412	16.814	19.216	21.618
45	2.459	4.918	7.377	9.836	12.295	14.754	17.213	19.672	22.131
46	2.516	5.032	7.548	10.064	12.580	15.096	17.612	20.128	22.644
47	2.573	5.146	7.719	10.292	12.865	15.438	18.011	20.584	23.157
48	2.630	5.260	7.890	10.520	13.150	15.780	18.410	21.040	23.670
0.50	2.688	5.376	8.064	10.752	13.440	16.128	18.810	21.504	24.192
51	2.745	5.490	8.235	10.980	13.725	16.470	19.215	21.960	24.705
52	2.803	5.606	8.409	11.212	14.015	16.818	19.621	22.424	25.227
53	2.861	5.722	8.583	11.444	14.305	17.166	20.027	22.888	25.749
54	2.919	5.838	8.757	11.676	14.595	17.514	20.433	23.352	26.271
0.55	2.977	5.954	8.931	11.908	14.885	17.862	20.839	23.816	26.793
55	3.035	6.070	9.105	12.140	15.175	18.210	21.245	24.280	27.315
56	3.094	6.188	9.282	12.376	15.470	18.564	21.658	24.752	27.846
57	3.152	6.304	9.456	12.608	15.760	18.912	22.064	25.216	28.368
58	3.211	6.422	9.633	12.844	16.055	19.266	22.477	25.688	28.899
0.60	3.270	6.540	9.810	13.080	16.350	19.620	22.890	26.160	29.430
61	3.329	6.658	9.987	13.316	16.645	19.974	23.303	26.632	29.961
62	3.388	6.776	10.164	13.552	16.940	20.328	23.716	27.104	30.492
63	3.448	6.896	10.344	13.792	17.240	20.688	24.136	27.584	31.032
64	3.507	7.014	10.521	14.028	17.535	21.042	24.549	28.056	31.563
0.65	3.567	7.134	10.701	14.268	17.835	21.402	24.969	28.536	32.103
65	3.627	7.254	10.881	14.508	18.135	21.762	25.389	29.016	32.643
66	3.687	7.374	11.061	14.748	18.435	22.122	25.809	29.496	33.183
67	3.747	7.494	11.241	14.988	18.735	22.482	26.229	29.976	33.723
68	3.807	7.614	11.421	15.228	19.035	22.842	26.649	30.456	34.263
0.70	3.868	7.736	11.604	15.472	19.340	23.208	27.076	30.944	34.812
71	3.928	7.856	11.784	15.712	19.640	23.568	27.496	31.424	35.352
72	3.989	7.978	11.967	15.956	19.945	23.934	27.923	31.912	35.901
73	4.050	8.100	12.150	16.200	20.250	24.300	28.350	32.400	36.450
74	4.111	8.222	12.333	16.444	20.555	24.666	28.777	32.888	36.999
0.75	4.172	8.344	12.516	16.688	20.860	25.032	29.204	33.376	37.548
75	4.233	8.466	12.699	16.932	21.165	25.398	29.631	33.864	38.097
76	4.295	8.590	12.885	17.180	21.475	25.770	30.065	34.360	38.655
77	4.356	8.712	13.068	17.424	21.780	26.136	30.492	34.848	39.204
78	4.418	8.833	13.254	17.672	22.090	26.508	30.928	35.344	39.762
0.80	4.480	8.960	13.440	17.920	22.400	26.880	31.380	35.840	40.320
81	4.542	9.084	13.626	18.168	22.710	27.252	31.794	36.333	40.878
82	4.604	9.208	13.812	18.416	23.020	27.624	32.228	36.832	41.433
83	4.667	9.334	14.001	18.668	23.335	28.002	32.669	37.333	42.000
84	4.729	9.458	14.187	18.916	23.645	28.374	33.103	37.832	42.561

表 1 (續)

L	1	2	3	4	5	6	7	8	9
$H_1 + H_2$									
0.85	4.792	9.564	14.376	19.168	23.960	28.752	33.544	38.336	43.128
86	4.855	9.710	14.565	19.420	24.275	29.150	33.985	38.840	43.685
87	4.918	9.836	14.754	19.672	24.590	29.508	34.426	39.344	44.262
88	4.981	9.962	14.943	19.924	24.905	29.886	34.867	39.848	44.829
89	5.044	10.088	15.132	20.176	25.220	30.264	35.308	40.352	45.396
0.90	5.108	10.216	15.324	20.432	25.540	30.648	35.756	40.864	45.972
91	5.171	10.342	15.513	20.684	25.855	31.026	36.197	41.368	46.539
92	5.235	10.470	15.705	20.940	26.175	31.410	36.645	41.880	47.115
93	5.299	10.598	15.897	21.196	26.495	31.794	37.093	42.392	47.691
94	5.363	10.726	16.089	21.452	26.815	32.178	37.541	42.904	48.267
0.95	5.427	10.854	16.281	21.708	27.135	32.562	37.989	43.416	48.843
96	5.491	10.982	16.473	21.964	27.455	32.946	38.437	43.928	49.419
97	5.556	11.112	16.668	22.224	27.780	33.336	38.892	44.448	50.004
98	5.620	11.240	16.860	22.480	28.100	33.720	39.340	44.960	50.580
99	5.685	11.370	17.055	22.740	28.425	34.100	39.795	45.480	51.165
1.00	5.750	11.500	17.250	23.000	28.750	34.500	40.250	46.000	51.750
01	5.815	11.630	17.445	23.260	29.075	34.890	40.705	46.520	52.335
02	5.880	11.760	17.640	23.520	29.400	35.280	41.160	47.040	52.920
03	5.946	11.892	17.838	23.784	29.730	35.676	41.622	47.568	53.514
04	6.011	12.022	18.033	24.044	30.055	36.066	42.077	48.088	54.099
1.05	6.077	12.154	18.231	24.308	30.385	36.462	42.539	48.616	54.623
06	6.143	12.286	18.429	24.572	30.715	36.858	43.001	49.144	55.287
07	6.209	12.418	18.627	24.836	31.045	37.254	43.463	49.672	55.881
08	6.275	12.550	18.825	25.100	31.375	37.650	43.925	50.200	56.475
09	6.341	12.682	19.023	25.364	31.705	38.048	44.387	50.728	57.069
1.10	6.408	12.816	19.224	25.632	32.040	38.448	44.856	51.264	57.672
11	6.474	12.948	19.422	25.896	32.370	38.844	45.318	51.792	58.266
12	6.541	13.082	19.623	26.164	32.705	39.246	45.787	52.328	58.869
13	6.608	13.216	19.824	26.432	33.040	39.649	46.256	52.864	59.472
14	6.675	13.350	20.025	26.700	33.375	40.050	46.725	53.400	60.075
1.15	6.742	13.484	20.226	26.968	33.710	40.452	47.194	53.936	60.678
16	6.809	13.618	20.427	27.236	34.045	40.854	47.663	54.472	61.281
17	6.877	13.754	20.631	27.508	34.385	41.262	48.139	55.016	61.893
18	6.944	13.888	20.832	27.776	34.720	41.664	48.608	55.552	62.496
19	7.012	14.024	21.036	28.048	35.060	42.072	49.084	56.096	63.108
1.20	7.080	14.160	21.240	28.320	35.400	42.480	49.560	56.640	63.720
21	7.148	14.296	21.444	28.592	35.740	42.888	50.033	57.184	64.332
22	7.216	14.432	21.648	28.864	36.080	43.296	50.512	57.728	64.944
23	7.285	14.570	21.855	29.140	36.425	43.710	50.995	58.280	65.565
24	7.353	14.706	22.059	29.412	36.763	44.118	51.471	58.824	66.177
1.25	7.422	14.844	22.266	29.688	37.110	44.532	51.954	59.376	66.798
26	7.491	14.982	22.473	29.964	37.455	44.946	52.437	59.928	67.419
27	7.560	15.120	22.680	30.240	37.800	45.360	52.920	60.480	68.040
28	7.629	15.258	22.887	30.516	38.145	45.777	53.403	61.032	68.661
29	7.698	15.396	23.094	30.792	38.490	46.188	53.886	61.584	69.282
1.30	7.768	15.538	23.304	31.072	38.840	46.608	54.376	62.144	69.912
31	7.837	15.674	23.511	31.348	39.185	47.022	54.859	62.696	70.533
32	7.907	15.814	23.721	31.628	39.535	47.442	55.349	63.256	71.163
33	7.977	15.954	23.931	31.908	39.885	47.862	55.839	63.816	71.793
34	8.047	16.094	24.141	32.188	40.235	48.282	56.329	64.276	72.423

表 1 (續)

$\frac{L}{H_1+H_2}$	1	2	3	4	5	6	7	8	9
1.35	8.117	16.234	24.351	32.468	40.585	48.702	56.819	64.936	73.053
36	8.187	16.374	24.561	32.748	40.935	49.122	57.309	65.496	73.683
37	8.258	16.516	24.774	33.032	41.290	49.548	57.806	66.064	74.322
38	8.328	16.656	24.984	33.312	41.640	49.968	58.296	66.624	74.952
39	8.399	16.798	25.197	33.596	41.995	50.394	58.793	67.192	75.591
1.40	8.470	16.940	25.410	33.880	42.350	50.820	59.290	67.760	76.230
41	8.541	17.082	25.623	34.164	42.705	51.246	59.787	68.328	76.869
42	8.612	17.224	25.836	34.448	43.060	51.672	60.284	68.896	77.508
43	8.684	17.368	26.052	34.736	43.420	52.104	60.788	69.472	78.156
44	8.755	17.510	26.265	35.020	43.775	52.530	61.285	70.040	78.795
1.45	8.827	17.654	26.481	35.308	44.135	52.962	61.789	70.616	79.443
46	8.899	17.798	26.697	35.596	44.495	53.394	62.293	71.192	80.091
47	8.971	17.942	26.913	35.884	44.855	53.826	62.797	71.768	80.739
48	9.043	18.086	27.129	36.172	45.215	54.258	63.301	72.344	81.387
49	9.115	18.230	27.345	36.460	45.575	54.690	63.805	72.920	82.035
1.50	9.188	18.378	27.584	36.752	45.940	55.128	64.318	73.504	82.692
51	9.260	18.520	27.780	37.040	46.300	55.560	64.820	74.080	83.340
52	9.333	18.666	27.999	37.332	46.665	55.998	65.331	74.664	83.997
53	9.406	18.812	28.218	37.624	47.030	55.436	65.842	75.248	84.654
54	9.479	18.958	28.437	37.916	47.395	55.874	66.353	75.832	85.311
1.55	9.552	19.104	28.656	38.208	47.760	57.312	66.864	76.416	85.968
56	9.625	19.250	28.875	38.500	48.125	57.750	67.375	77.000	86.625
57	9.699	19.398	29.097	38.796	48.495	58.194	67.893	77.592	87.291
58	9.772	19.544	29.316	39.088	48.860	58.632	68.404	78.176	87.948
59	9.846	19.692	29.538	39.384	49.230	59.076	68.922	78.768	88.614
1.60	9.920	19.840	29.760	39.680	49.600	59.520	69.440	79.360	89.280
61	9.994	19.988	29.982	39.976	49.970	59.964	69.958	79.952	89.946
62	10.068	20.136	30.204	40.272	50.340	60.408	70.476	80.544	90.612
63	10.143	20.283	30.429	40.572	50.715	60.858	71.001	81.144	91.287
64	10.217	20.434	30.651	40.868	51.085	61.302	71.519	81.738	91.953
1.65	10.292	20.584	30.876	41.168	51.460	61.752	72.044	82.336	92.628
66	10.367	20.734	31.101	41.468	51.835	62.202	72.569	82.936	93.303
67	10.442	20.884	31.326	41.768	52.210	62.652	73.094	83.538	93.978
68	10.517	21.034	31.551	42.068	52.585	63.102	73.619	84.136	94.653
69	10.592	21.184	31.776	42.368	52.960	63.552	74.144	84.736	95.328
1.70	10.668	21.336	32.004	42.672	53.340	64.008	74.676	85.344	96.012
71	10.743	21.488	32.229	42.972	53.715	64.458	75.201	85.944	96.687
72	10.819	21.638	32.457	43.276	54.095	64.914	75.733	86.552	97.371
73	10.895	21.790	32.685	43.580	54.475	65.370	76.265	87.160	98.055
74	10.971	21.942	32.913	43.884	54.855	65.826	76.797	87.768	98.739
1.75	11.047	22.094	33.141	44.188	55.235	66.282	77.329	88.376	99.423
76	11.123	22.246	33.369	44.492	55.615	66.738	77.861	88.984	100.107
77	11.200	22.400	33.600	44.800	56.000	67.200	78.400	89.600	100.800
78	11.276	22.552	33.828	45.104	56.380	67.656	78.932	90.208	101.484
79	11.353	22.706	34.059	45.412	56.765	68.118	79.471	90.824	102.177
1.80	11.429	22.860	34.290	45.720	57.150	68.580	80.010	91.440	102.870
81	11.507	23.014	34.521	46.028	57.535	69.042	80.549	92.056	103.563
82	11.584	23.168	34.752	46.336	57.920	69.504	81.088	92.672	104.256
83	11.662	23.324	34.986	46.648	58.310	69.972	81.634	93.296	104.958
84	11.739	23.478	35.217	46.956	58.695	70.434	82.173	93.912	105.651

表 1 (續)

L	1	2	3	4	5	6	7	8	9
$H_1 + H_2$									
1.85	11.817	23.634	35.451	47.268	59.085	70.902	82.719	94.536	106.353
86	11.895	23.790	35.685	47.580	59.475	71.370	83.265	95.160	107.055
87	11.973	23.946	35.919	47.892	59.865	71.838	83.811	95.784	107.757
88	12.051	24.102	36.153	48.204	60.255	72.306	84.357	96.408	108.459
89	12.129	24.258	36.387	48.516	60.645	72.774	84.903	97.032	109.161
1.90	12.208	24.418	36.624	48.832	61.040	73.248	85.456	97.664	109.872
91	12.286	24.572	36.858	49.144	61.430	73.716	86.002	98.288	110.574
92	12.365	24.730	37.095	49.460	61.825	74.190	86.555	98.920	111.285
93	12.444	24.888	37.332	49.776	62.220	74.664	87.108	99.552	111.996
94	12.523	25.046	37.569	50.092	62.615	75.138	87.661	100.184	112.707
1.95	12.602	25.204	37.806	50.408	63.010	75.612	88.214	100.816	113.418
96	12.681	25.362	38.043	50.724	63.405	76.086	88.767	101.448	114.129
97	12.761	25.522	38.283	51.044	63.805	76.566	89.327	102.088	114.849
98	12.840	25.680	38.520	51.360	64.200	77.040	89.880	102.720	115.560
99	12.920	25.840	38.760	51.680	64.600	77.520	90.440	103.360	116.260
2.00	13.000	26.000	39.000	52.000	65.000	78.000	91.000	104.000	117.000

表 2

路 堤 土 方 表

B=10M;

H: 0~8M;

m=1.5;

L H ₁ +H ₂	1	2	3	4	5	6	7	8	9
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
01	0.050	0.100	0.150	0.200	0.250	0.300	0.350	0.400	0.450
02	0.100	0.200	0.300	0.400	0.500	0.600	0.700	0.800	0.900
03	0.150	0.300	0.450	0.600	0.750	0.900	1.050	1.200	1.350
04	0.201	0.402	0.603	0.804	1.005	1.206	1.407	1.608	1.809
05	0.250	0.500	0.750	1.000	1.250	1.500	1.750	2.000	2.250
06	0.301	0.602	0.903	1.204	1.505	1.806	2.107	2.408	2.709
07	0.352	0.704	1.056	1.408	1.760	2.112	2.464	2.816	3.168
08	0.402	0.804	1.206	1.608	2.010	2.412	2.814	3.216	3.618
09	0.453	0.906	1.359	1.812	2.265	2.718	3.171	3.624	4.077
0.10	0.504	1.008	1.512	2.016	2.520	3.024	3.528	4.032	4.536
11	0.555	1.110	1.667	2.220	2.775	3.330	3.885	4.440	4.995
12	0.605	1.210	1.815	2.420	3.025	3.630	4.235	4.840	5.445
13	0.656	1.312	1.908	2.624	3.280	3.936	4.592	5.248	5.904
14	0.707	1.414	2.121	2.828	3.535	4.242	4.949	5.656	6.363
0.15	0.758	1.516	2.274	3.032	3.790	4.548	5.306	6.064	6.822
16	0.810	1.620	2.430	3.240	4.050	4.830	5.670	6.480	7.290
17	0.861	1.722	2.583	3.444	4.305	5.165	6.027	6.888	7.749
18	0.912	1.824	2.735	3.648	4.580	5.472	6.384	7.296	8.208
19	0.964	1.928	2.892	3.856	4.820	5.784	6.748	7.712	8.676
0.20	1.015	2.030	3.045	4.060	5.075	6.090	7.105	8.120	9.135
21	1.067	2.134	3.201	4.268	5.335	6.402	7.469	8.536	9.603
22	1.118	2.236	3.354	4.472	5.590	6.708	7.826	8.944	10.062
23	1.170	2.340	3.510	4.680	5.850	7.020	8.190	9.360	10.530
24	1.222	2.444	3.663	4.888	6.110	7.332	8.554	9.776	10.998
0.25	1.273	2.548	3.810	5.092	6.365	7.638	8.911	10.184	11.457
26	1.325	2.650	3.975	5.300	6.625	7.950	9.275	10.600	11.925
27	1.377	2.754	4.131	5.508	6.855	8.262	9.639	11.016	12.393
28	1.429	2.858	4.287	5.716	7.145	8.574	10.003	11.432	12.861
29	1.482	2.961	4.446	5.928	7.410	8.892	10.374	11.856	13.338
0.30	1.534	3.068	4.602	6.136	7.670	9.204	10.738	12.272	13.806
31	1.586	3.172	4.758	6.344	7.930	9.516	11.102	12.668	14.274
32	1.638	3.276	4.914	6.552	8.190	9.828	11.466	13.104	14.742
33	1.691	3.382	5.073	6.764	8.455	10.146	11.837	13.528	15.219
34	1.743	3.486	5.229	6.972	8.715	10.458	12.201	13.944	15.687

表 2 (續)

L	1	2	3	4	5	6	7	8	9
$H_1 + H_2$									
0.35	1.796	3.592	5.388	7.184	8.980	10.776	12.572	14.368	16.164
36	1.849	3.698	5.547	7.396	9.245	11.094	12.943	14.792	16.641
37	1.901	3.802	5.703	7.604	9.505	11.406	13.307	15.208	17.109
38	1.954	3.908	5.832	7.816	9.770	11.724	13.678	15.632	17.588
39	2.007	4.014	6.021	8.028	10.035	12.042	14.049	16.056	18.063
0.40	2.060	4.120	6.180	8.240	10.300	12.350	14.420	16.480	18.540
41	2.113	4.226	6.339	8.452	10.535	12.678	14.791	16.904	19.017
42	2.166	4.332	6.498	8.664	10.830	12.993	15.102	17.328	19.494
43	2.219	4.438	6.657	8.876	11.095	13.314	15.533	17.752	19.971
44	2.273	4.548	6.819	9.092	11.365	13.638	15.911	18.184	20.457
0.45	2.325	4.652	6.978	9.304	11.630	13.956	16.282	18.608	20.934
46	2.379	4.758	7.137	9.518	11.895	14.274	16.653	19.032	21.411
47	2.433	4.863	7.299	9.732	12.165	14.598	17.031	19.444	21.897
48	2.483	4.972	7.458	9.944	12.430	14.916	17.402	19.888	22.374
49	2.540	5.080	7.620	10.160	12.700	15.240	17.780	20.320	22.830
0.50	2.594	5.188	7.782	10.376	12.970	15.564	18.158	20.752	23.348
51	2.648	5.293	7.944	10.592	13.240	15.888	18.533	21.184	23.832
52	2.701	5.402	8.103	10.804	13.505	16.203	18.907	21.608	24.309
53	2.755	5.510	8.265	11.020	13.775	16.530	19.285	22.040	24.795
54	2.809	5.618	8.427	11.238	14.045	16.854	19.693	22.472	25.281
0.55	2.863	5.726	8.589	11.452	14.315	17.178	20.041	22.904	25.787
56	2.918	5.836	8.754	11.672	14.590	17.508	20.426	23.344	26.282
57	2.972	5.944	8.916	11.888	14.860	17.832	20.804	23.776	26.748
58	3.026	6.052	9.078	12.104	15.130	18.158	21.182	24.208	27.234
59	3.081	6.162	9.243	12.324	15.405	18.488	21.567	24.648	27.729
0.60	3.135	6.270	9.405	12.540	15.675	18.810	21.945	25.080	28.215
61	3.190	6.380	9.570	12.760	15.950	19.140	22.330	25.520	28.710
62	3.244	6.488	9.732	12.976	16.220	19.434	22.708	25.952	29.196
63	3.299	6.598	9.897	13.196	16.495	19.794	23.093	26.392	29.691
64	3.354	6.708	10.062	13.416	16.770	20.124	23.478	26.832	30.186
0.65	3.408	6.818	10.224	13.632	17.040	20.448	23.856	27.264	30.672
66	3.463	6.928	10.389	13.852	17.315	20.778	24.241	27.704	31.167
67	3.518	7.036	10.554	14.072	17.590	21.108	24.626	28.144	31.662
68	3.573	7.146	10.719	14.292	17.865	21.438	25.011	28.584	32.157
69	3.629	7.258	10.887	14.518	18.145	21.774	25.403	29.032	32.651
0.70	3.684	7.368	11.052	14.736	18.420	22.104	25.788	29.472	33.156
71	3.739	7.478	11.217	14.956	18.695	22.434	26.173	29.912	33.651
72	3.794	7.588	11.382	15.176	18.970	22.764	26.558	30.352	34.146
73	3.850	7.700	11.550	15.400	19.250	23.100	26.950	30.800	34.650
74	3.905	7.810	11.715	15.620	19.525	23.430	27.335	31.240	35.145
0.75	3.961	7.922	11.883	15.844	19.805	23.766	27.727	31.688	35.649
76	4.017	8.043	12.051	16.068	20.085	24.102	28.119	32.133	36.153
77	4.072	8.144	12.216	16.288	20.360	24.432	28.504	32.576	36.648
78	4.128	8.256	12.384	16.512	20.640	24.768	28.896	33.024	37.152
79	4.184	8.368	12.552	16.736	20.920	25.104	29.288	33.472	37.656
0.80	4.240	8.480	12.720	16.960	21.200	25.440	29.680	33.920	38.160
81	4.298	8.592	12.888	17.184	21.480	25.776	30.072	34.368	38.634
82	4.352	8.704	13.056	17.408	21.760	26.112	30.464	34.816	39.108
83	4.408	8.816	13.224	17.632	22.040	26.448	30.856	35.264	39.672
84	4.465	8.930	13.395	17.856	22.325	26.790	31.255	35.720	40.185

表 2 (續)

$H_1 + H_2$	1	2	3	4	5	6	7	8	9
0.85	4.521	9.042	13.563	18.084	22.605	27.126	31.647	36.168	40.689
85	4.577	9.154	13.731	18.308	22.885	27.462	32.039	36.618	41.193
87	4.634	9.268	13.902	18.536	23.170	27.804	32.438	37.072	41.706
88	4.690	9.380	14.070	18.760	23.450	28.140	32.830	37.520	42.210
89	4.747	9.494	14.241	18.988	23.735	28.482	33.229	37.976	42.723
0.90	4.804	9.608	14.412	19.216	24.020	28.824	33.628	38.432	43.236
91	4.861	9.722	14.583	19.444	24.305	29.163	34.027	38.888	43.749
92	4.917	9.834	14.751	19.668	24.585	29.502	34.419	39.336	44.253
93	4.974	9.948	14.922	19.896	24.870	29.844	34.818	39.792	44.763
94	5.031	10.062	15.093	20.124	25.155	30.186	35.217	40.248	45.279
0.95	5.088	10.176	15.264	20.352	25.440	30.528	35.616	40.704	45.792
95	5.146	10.292	15.438	20.584	25.730	30.876	36.022	41.168	46.314
97	5.203	10.406	15.609	20.812	26.015	31.218	36.421	41.624	46.827
98	5.260	10.520	15.780	21.040	26.300	31.560	36.820	42.080	47.340
99	5.318	10.636	15.954	21.272	26.590	31.908	37.226	42.544	47.862
1.00	5.375	10.750	16.125	21.500	26.875	32.250	37.625	43.000	48.375
01	5.433	10.866	16.299	21.732	27.165	32.598	38.031	43.464	48.897
02	5.490	10.980	16.470	21.960	27.450	32.940	38.430	43.920	49.410
03	5.548	11.096	16.644	22.192	27.740	33.288	38.836	44.384	49.932
04	5.606	11.212	16.818	22.424	28.030	33.636	39.242	44.848	50.454
1.05	5.663	11.326	16.989	22.652	28.315	33.978	39.641	45.304	50.967
05	5.721	11.442	17.163	22.884	28.605	34.326	40.047	45.768	51.489
07	5.779	11.558	17.337	23.118	28.895	34.674	40.453	46.232	52.011
08	5.837	11.674	17.511	23.348	29.185	35.022	40.859	46.696	52.533
09	5.896	11.792	17.688	23.584	29.480	35.376	41.272	47.168	53.054
1.10	5.954	11.908	17.862	23.816	29.770	35.724	41.678	47.632	53.586
11	6.012	12.024	18.038	24.048	30.060	36.072	42.084	48.096	54.108
12	6.070	12.140	18.210	24.280	30.350	36.420	42.490	48.560	54.630
13	6.129	12.258	18.387	24.516	30.645	36.774	42.903	49.032	55.161
14	6.187	12.374	18.561	24.748	30.935	37.122	43.309	49.496	55.683
1.15	6.246	12.492	18.738	24.984	31.230	37.476	43.722	49.968	56.214
15	6.305	12.610	18.915	25.220	31.525	37.830	44.132	50.440	56.745
17	6.363	12.726	19.089	25.452	31.815	38.178	44.541	50.904	57.267
18	6.422	12.844	19.266	25.688	32.110	38.532	44.954	51.376	57.798
19	6.481	12.962	19.443	25.924	32.405	38.886	45.367	51.848	58.329
1.20	6.540	13.080	19.620	26.160	32.700	39.240	45.780	52.320	58.860
21	6.599	13.198	19.798	26.396	32.995	39.594	46.193	52.792	59.391
22	6.658	13.316	19.974	26.632	33.290	39.948	46.603	53.264	59.922
23	6.717	13.434	20.151	26.868	33.585	40.302	47.019	53.736	60.453
24	6.777	13.554	20.331	27.106	33.885	40.632	47.439	54.216	60.993
1.25	6.833	13.672	20.508	27.344	34.180	41.016	47.852	54.688	61.524
26	6.895	13.790	20.685	27.580	34.475	41.370	48.265	55.160	62.055
27	6.955	13.910	20.865	27.820	34.775	41.730	48.685	55.640	62.595
28	7.014	14.028	21.042	28.056	35.070	42.084	49.098	56.112	63.128
29	7.074	14.148	21.222	28.293	35.370	42.444	49.518	56.592	63.663
1.30	7.134	14.268	21.402	28.536	35.670	42.804	49.938	57.072	64.203
31	7.194	14.388	21.582	28.778	35.970	43.164	50.358	57.552	64.746
32	7.253	14.508	21.759	29.012	36.265	43.518	50.771	58.024	65.277
33	7.313	14.628	21.939	29.252	36.565	43.878	51.191	58.504	65.817
34	7.373	14.748	22.119	29.492	36.865	44.238	51.611	58.984	66.357

表 2 (續)

L	1	2	3	4	5	6	7	8	9
$H_1 + H_2$									
1.35	7.493	14.833	22.299	29.732	37.165	44.598	52.031	59.464	66.897
33	7.494	14.988	22.482	29.978	37.470	44.934	52.458	59.952	67.446
37	7.554	15.108	22.662	30.216	37.770	45.324	52.878	60.432	67.988
38	7.614	15.228	22.842	30.456	38.070	45.984	53.298	60.912	68.526
39	7.675	15.350	23.025	30.700	38.375	46.050	53.725	61.400	69.075
1.40	7.735	15.470	23.205	30.940	38.675	46.410	54.145	61.680	69.615
41	7.796	15.592	23.388	31.184	38.980	46.778	54.572	62.368	70.164
42	7.853	15.712	23.538	31.424	39.280	47.139	54.992	62.848	70.704
43	7.917	15.834	23.751	31.668	39.585	47.502	55.419	63.336	71.253
44	7.978	15.953	23.934	31.912	39.890	47.868	55.846	63.824	71.802
1.45	8.038	16.078	24.114	32.152	40.190	48.228	56.266	64.304	72.342
46	8.099	16.198	24.297	32.398	40.495	48.594	56.693	64.792	72.891
47	8.160	16.320	24.480	32.640	40.800	48.960	57.120	65.280	73.440
48	8.221	16.442	24.633	32.884	41.105	49.326	57.547	65.768	73.989
49	8.283	16.563	24.849	33.132	41.415	49.698	57.981	66.264	74.547
1.50	8.344	16.688	25.032	33.376	41.720	50.064	58.408	66.752	75.096
51	8.405	16.810	25.215	33.620	42.025	50.430	58.835	67.240	75.645
52	8.466	16.932	25.398	33.864	42.330	50.796	59.212	67.728	76.194
53	8.528	17.056	25.584	34.112	42.640	51.168	59.696	68.224	76.752
54	8.589	17.178	25.767	34.356	42.945	51.534	60.122	68.712	77.301
1.55	8.651	17.302	25.953	34.604	43.255	51.906	60.557	69.208	77.859
55	8.713	17.428	26.139	34.852	43.565	52.278	60.991	69.704	78.417
57	8.774	17.548	26.322	35.099	43.870	52.644	61.418	70.192	78.968
58	8.833	17.672	26.506	35.344	44.180	53.016	61.852	70.688	79.524
59	8.898	17.793	26.694	35.592	44.490	53.388	62.289	71.184	80.022
1.60	8.960	17.920	26.880	35.840	44.800	53.760	62.720	71.680	80.640
61	9.022	18.044	27.069	36.088	45.110	54.132	63.154	72.173	81.198
62	9.084	18.168	27.252	36.333	45.420	54.504	63.588	72.672	81.758
63	9.145	18.292	27.438	36.584	45.730	54.876	64.022	73.168	82.314
64	9.209	18.418	27.627	36.838	45.045	55.254	64.463	73.672	82.881
1.65	9.271	18.542	27.813	37.084	46.355	55.626	64.897	74.168	83.439
65	9.333	18.619	27.999	37.332	46.665	55.996	65.331	74.684	83.997
67	9.393	18.792	28.188	37.584	46.980	56.376	65.772	75.198	84.564
68	9.458	18.913	28.374	37.832	47.290	56.748	66.206	75.634	85.122
69	9.521	19.042	28.563	38.084	47.605	57.128	66.647	76.168	85.689
1.70	9.584	19.168	28.752	38.336	47.920	57.504	67.088	76.672	86.256
71	9.647	19.294	28.941	38.588	48.235	57.882	67.529	77.176	86.823
72	9.709	19.418	29.127	38.838	48.545	58.254	67.963	77.672	87.381
73	9.772	19.544	29.316	39.088	48.860	58.632	68.404	78.176	87.948
74	9.835	19.670	29.505	39.340	49.175	59.010	68.845	78.680	88.515
1.75	9.898	19.796	29.694	39.592	49.490	59.388	69.288	79.184	89.082
76	9.962	19.924	29.886	39.848	49.810	59.772	69.734	79.696	89.658
77	10.025	20.050	30.075	40.100	50.125	60.150	70.175	80.200	90.225
78	10.088	20.176	30.264	40.352	50.440	60.528	70.616	80.704	90.792
79	10.151	20.302	30.453	40.604	50.755	60.906	71.057	81.208	91.359
1.80	10.215	20.430	30.645	40.860	51.075	61.290	71.505	81.720	91.935
81	10.279	20.558	30.837	41.116	51.395	61.674	71.953	82.232	92.511
82	10.342	20.684	31.026	41.368	51.710	62.052	72.394	82.736	93.078
83	10.403	20.812	31.218	41.624	52.030	62.436	72.842	83.248	93.654
84	10.470	20.940	31.410	41.880	52.350	62.820	73.290	83.760	94.230

表 2 (續)

L	1	2	3	4	5	6	7	8	9
$H_1 + H_2$									
1.85	10.533	21.068	31.599	42.132	52.665	63.198	73.731	84.264	94.797
86	10.597	21.194	31.797	42.388	52.985	63.582	74.179	84.776	95.373
87	10.661	21.322	31.983	42.644	53.305	63.906	74.627	85.258	95.949
88	10.725	21.450	32.175	42.900	53.625	64.350	75.075	85.800	96.525
89	10.790	21.580	32.370	43.160	53.950	64.740	75.530	86.320	97.110
1.90	10.854	21.708	32.562	43.416	54.270	65.124	75.978	86.832	97.688
91	10.918	21.836	32.754	43.672	54.590	65.508	76.428	87.344	98.262
92	10.982	21.964	32.946	43.928	54.910	65.892	76.874	87.856	98.838
93	11.047	22.094	33.141	44.188	55.235	66.282	77.329	88.376	99.423
94	11.111	22.222	33.333	44.444	55.555	66.666	77.777	88.888	99.999
1.95	11.176	22.352	33.528	44.704	55.880	67.056	78.232	89.408	100.584
96	11.241	22.482	33.723	44.964	56.205	67.446	78.687	89.928	101.189
97	11.305	22.610	33.915	45.220	56.525	67.830	79.135	90.440	101.745
98	11.370	22.740	34.110	45.480	56.850	68.220	79.590	90.960	102.330
99	11.435	22.870	34.305	45.740	57.175	68.610	80.045	91.480	102.915
2.00	11.500	23.000	34.500	46.000	57.500	69.000	80.500	92.000	103.500
01	11.565	23.130	34.695	46.260	57.825	69.390	80.955	92.520	104.085
02	11.630	23.260	34.890	46.520	58.150	69.780	81.410	93.040	104.670
03	11.695	23.390	35.085	46.780	58.475	70.170	81.865	93.560	105.255
04	11.761	23.522	35.283	47.044	58.805	70.566	82.327	94.088	105.849
2.05	11.826	23.652	35.478	47.304	59.130	70.956	82.782	94.608	106.434
06	11.891	23.782	35.673	47.564	59.455	71.346	83.237	95.128	107.019
07	11.957	23.914	35.871	47.828	59.785	71.742	83.699	95.656	107.613
08	12.022	24.044	36.066	48.088	60.110	72.132	84.154	96.176	108.198
09	12.088	24.176	36.264	48.352	60.440	72.528	84.616	96.704	108.792
2.10	12.154	24.308	36.462	48.616	60.770	72.924	85.078	97.232	109.386
11	12.220	24.440	36.660	48.880	61.100	73.320	85.540	97.760	109.980
12	12.285	24.570	36.855	49.140	61.425	73.710	85.995	98.280	110.565
13	12.351	24.702	37.053	49.404	61.755	74.106	86.457	98.808	111.159
14	12.417	24.834	37.251	49.668	62.085	74.502	86.919	99.336	111.753
2.15	12.483	24.966	37.449	49.932	62.415	74.898	87.381	99.864	112.347
16	12.550	25.100	37.650	50.200	62.750	75.300	87.850	100.400	112.950
17	12.616	25.232	37.848	50.464	63.080	75.696	88.312	100.928	113.544
18	12.682	25.364	38.046	50.728	63.410	76.092	88.774	101.456	114.138
19	12.749	25.498	38.247	50.996	63.745	76.494	89.243	101.992	114.741
2.20	12.815	25.630	38.445	51.260	64.075	76.890	89.705	102.520	115.335
21	12.882	25.764	38.646	51.528	64.410	77.292	90.174	103.056	115.938
22	12.948	25.896	38.844	51.792	64.740	77.688	90.636	103.584	116.532
23	13.015	26.030	39.045	52.060	65.075	78.090	91.105	104.120	117.135
24	13.082	26.164	39.246	52.328	65.410	78.492	91.574	104.656	117.738
2.25	13.148	26.296	39.444	52.592	65.740	78.888	92.036	105.184	118.332
26	13.315	26.430	39.645	52.860	66.075	79.290	92.505	105.720	118.935
27	13.282	26.524	39.849	53.128	66.410	79.692	92.974	106.256	119.538
28	13.349	26.698	40.047	53.396	66.745	80.094	93.443	106.792	120.141
29	13.417	26.834	40.251	53.668	67.085	80.502	93.919	107.336	120.753
2.30	13.484	26.968	40.452	53.936	67.420	80.904	94.388	107.872	121.356
31	13.551	27.102	40.653	54.204	67.755	81.306	94.857	108.408	121.959
32	13.618	27.236	40.854	54.472	68.090	81.708	95.326	108.944	122.562
33	13.686	27.372	41.058	54.744	68.430	82.116	95.802	109.488	123.174
34	13.753	27.506	41.259	55.012	68.765	82.518	96.271	110.024	123.777