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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：3.5公尺

教師參考室

陳列圖書不得攜出室外

一九五六年

PDG

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路基寬为 6.5 公尺的土方計算表說明書

本冊刊載路基寬为 6.5 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，其公式为：

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

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标高計算，其公式为：

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

式中：

$H_1 + H_2$ ——兩相鄰断面的工作标高（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）；

引用公式所求得土方工程數量較实际數量小，当 H_1 和 H_2 高差小於 1 公尺时，其差數很小，在計算土方时，可以不計。当高差 $(H_1 - H_2) > 1$ 公尺时，土方修正數应按修正數專冊中所載修正數計算表計算。

当計算路堤和路塹土方工程數量时，採用梯形的路基橫断面來計算。其梯形上部是以通过現有路基頂边所画的水平綫为限。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。

本冊包括下列三个土方計算表：

- (1) 路堤土方計算表；
- (2) 積雪地区开敞式淺挖路塹土方計算表；
- (3) 标准式路塹土方計算表。

路堤和开敞式路塹土方計算表中，列有平均工作标高現成的數值，这些數值的範圍見表的头一部份。

为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标高 (H_{cp})，而採用工作标高的和 ($H_1 + H_2$)。为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标高和 ($H_1 + H_2$) 用 2 除，其公式为：

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

在路堤和开敞式路塹土方計算表(表 1、2、3、4、5、6、7)中，工作标高和 ($H_1 + H_2$) 的

數值間隔為一公分，而在標準式路壩土方計算表（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。

為了求出幾十幾公尺長度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（ F_{cp} ）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，這是符合設計准則§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數量時，這種類型的橫斷面是最常見的情況。根據設計准則的規定，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（ F_{cp} ）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：

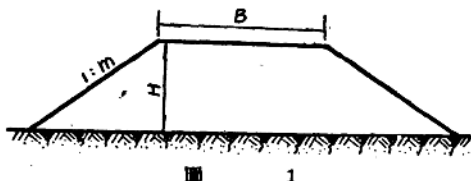


表3、表4、表5包括平均工作標高在6.0公尺以上，边坡坡度為變坡，路堤边坡上部系數（m）採用 $m=1.5$ ，而下部系數（n）採用 $n=1.75$ 的路堤土方工程數量，這是符合設計准則§1405的規定。

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：

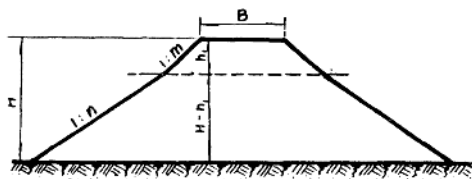


圖 2

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 公尺的路塹橫断面面積 (F_{cp}) 依下式求得：

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

其路基橫断面計算圖具有下列圖 3 的形式：

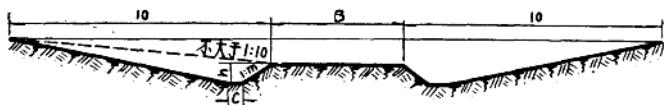


圖 3

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

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

其路基橫断面計算圖具有下列圖 4 的形式：

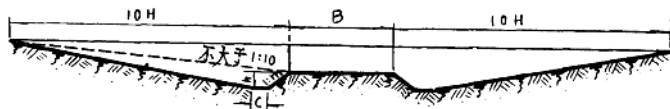


圖 4

在表 6 和表 7 的計算公式中，邊溝內坡系數以 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：

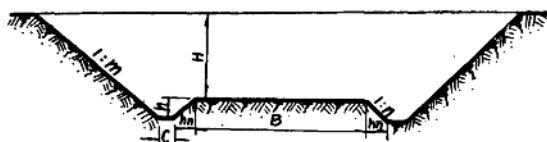


圖 5

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：求路堑地段的土方數量，其長为 65.34 公尺。边坡坡度为 1:1.5，横断面的工作标高以整个路堑地段兩端横断面的工作标高为限，等於 $H_1 = 2.36$ 公尺， $H_2 = 3.54$ 公尺。

找出工作标高和：

$$H_1 + H_2 = 2.36 + 3.54 = 6.00 \text{ 公尺}$$

在表 2 中查出：

当距离 $L = 60.00$ 公尺时，体积 $D = 1980.00$ 立方公尺

当距离 $L = 5.00$ 体积 $D = 165.00$ 立方公尺

当距离 $L = 0.30$ 体积 $D = 9.90$ 立方公尺

当距离 $L = 0.04$ 体积 $D = 1.32$ 立方公尺

当距离 $L = 65.34$ 公尺时，体积 $D = 2156.22$ 立方公尺

≈ 2156 立方公尺

表 1

路 堤 土 方 表

B=6.5 M

H: 0~1 M

m=3

1.	1	2	3	4	5	6	7	8	9
$H_1 + F_2$									
0.01	0.033	0.066	0.099	0.132	0.165	0.198	0.231	0.264	0.297
02	0.065	0.130	0.195	0.260	0.325	0.390	0.455	0.520	0.585
03	0.098	0.196	0.294	0.392	0.490	0.588	0.685	0.784	0.882
04	0.131	0.262	0.393	0.524	0.655	0.786	0.917	1.048	1.179
05	0.165	0.330	0.495	0.660	0.825	0.990	1.155	1.320	1.485
0.06	0.198	0.396	0.594	0.792	0.990	1.188	1.386	1.584	1.782
07	0.232	0.464	0.696	0.928	1.160	1.392	1.624	1.856	2.088
08	0.265	0.530	0.795	1.060	1.325	1.590	1.855	2.120	2.385
09	0.299	0.598	0.897	1.196	1.495	1.794	2.093	2.392	2.691
10	0.333	0.666	0.999	1.332	1.665	1.998	2.331	2.664	2.997
0.11	0.367	0.734	1.101	1.468	1.835	2.202	2.569	2.936	3.303
12	0.401	0.802	1.203	1.604	2.005	2.406	2.807	3.208	3.609
13	0.436	0.872	1.308	1.744	2.180	2.616	3.052	3.488	3.924
14	0.470	0.940	1.410	1.880	2.350	2.820	3.290	3.760	4.230
15	0.505	1.010	1.515	2.020	2.525	3.030	3.535	4.040	4.545
0.16	0.539	1.078	1.617	2.156	2.695	3.234	3.773	4.312	4.851
17	0.575	1.150	1.725	2.300	2.875	3.450	4.025	4.600	5.175
18	0.609	1.218	1.827	2.438	3.045	3.654	4.263	4.872	5.481
19	0.645	1.290	1.935	2.580	3.225	3.870	4.515	5.160	5.805
20	0.680	1.360	2.040	2.720	3.400	4.080	4.760	5.440	6.120
0.21	0.716	1.432	2.148	3.864	3.580	4.296	5.012	5.728	6.444
22	0.751	1.502	2.253	3.004	3.755	4.506	5.257	6.008	6.759
23	0.788	1.576	2.364	3.152	3.940	4.728	5.516	6.304	7.092
24	0.823	1.646	2.469	3.292	4.115	4.938	5.761	6.584	7.407
25	0.860	1.720	2.580	3.440	4.300	5.160	6.020	6.880	7.740
0.26	0.896	1.792	2.688	3.584	4.480	5.376	6.272	7.168	8.064
27	0.933	1.866	2.799	3.732	4.665	5.595	6.531	7.464	8.397
28	0.939	1.938	2.907	3.876	4.845	5.814	6.783	7.752	8.721
29	1.008	2.012	3.018	4.024	5.030	6.036	7.042	8.048	9.054
30	1.043	2.086	3.129	4.172	5.215	6.258	7.301	8.344	9.387
0.31	1.080	2.160	3.240	4.320	5.400	6.480	7.560	8.640	9.720
32	1.117	2.234	3.351	4.468	5.585	6.702	7.819	8.936	10.053
33	1.155	2.310	3.465	4.620	5.775	6.930	8.085	9.240	10.395
34	1.192	2.384	3.578	4.768	5.960	7.152	8.344	9.536	10.728
35	1.230	2.460	3.690	4.920	6.150	7.380	8.610	9.840	11.070

表 1 (續)

L	1	2	3	4	5	6	7	8	9
$H_1 + H_2$									
0.36	1.267	2.534	3.801	5.068	6.335	7.602	8.869	10.136	11.403
37	1.306	2.612	3.918	5.224	6.530	7.836	9.142	10.448	11.754
38	1.343	2.683	4.029	5.372	6.715	8.058	9.401	10.744	12.087
39	1.382	2.764	4.146	5.528	6.910	8.292	9.674	11.056	12.438
40	1.420	2.840	4.260	5.680	7.100	8.520	9.940	11.360	12.780
0.41	1.459	2.918	4.377	5.838	7.295	8.754	10.213	11.672	13.131
42	1.497	2.994	4.491	5.968	7.485	8.982	10.479	11.976	13.473
43	1.537	3.074	4.611	6.148	7.685	9.222	10.758	12.298	13.833
44	1.575	3.150	4.725	6.300	7.875	9.450	11.025	12.600	14.175
45	1.615	3.230	4.845	6.460	8.075	9.690	11.305	12.920	14.535
0.46	1.654	3.308	4.962	6.616	8.270	9.924	11.578	13.232	14.886
47	1.694	3.388	5.082	6.776	8.470	10.164	11.858	13.552	15.246
48	1.733	3.466	5.199	6.932	8.665	10.398	12.131	13.864	15.597
49	1.773	3.546	5.319	7.092	8.865	10.638	12.411	14.184	15.957
50	1.813	3.626	5.439	7.252	9.065	10.878	12.691	14.504	16.317
0.51	1.853	3.706	5.559	7.412	9.265	11.118	12.971	14.824	16.677
52	1.893	3.783	5.679	7.572	9.435	11.358	13.251	15.144	17.037
53	1.934	3.868	5.802	7.736	9.670	11.604	13.538	15.472	17.406
54	1.974	3.948	5.922	7.896	9.870	11.844	13.818	15.792	17.766
55	2.015	4.030	6.045	8.060	10.075	12.090	14.105	16.120	18.135
0.56	2.055	4.110	6.165	8.220	10.275	12.330	14.385	16.440	18.495
57	2.097	4.194	6.291	8.388	10.485	12.582	14.679	16.776	18.873
58	2.137	4.274	6.411	8.548	10.685	12.822	14.959	17.099	19.233
59	2.179	4.358	6.537	8.718	10.895	13.074	15.253	17.432	19.611
60	2.220	4.440	6.660	8.880	11.100	13.320	15.540	17.760	19.980
0.61	2.262	4.524	6.788	9.048	11.310	13.572	15.834	18.093	20.358
62	2.303	4.608	6.909	9.212	11.515	13.818	16.121	18.424	20.727
63	2.346	4.692	7.038	9.384	11.730	14.076	16.422	18.768	21.114
64	2.387	4.774	7.161	9.548	11.935	14.322	16.709	19.093	21.483
65	2.430	4.860	7.290	9.720	12.150	14.580	17.016	19.440	21.870
0.66	2.472	4.944	7.416	9.888	12.360	14.832	17.304	19.776	22.248
67	2.515	5.030	7.545	10.060	12.575	15.090	17.605	20.120	22.635
68	2.557	5.114	7.671	10.228	12.785	15.342	17.899	20.458	23.013
69	2.600	5.200	7.800	10.400	13.000	15.600	18.200	20.800	23.400
70	2.642	5.284	7.926	10.568	13.210	15.852	18.494	21.136	23.778
0.71	2.686	5.372	8.058	10.744	13.420	16.116	18.802	21.488	24.174
72	2.729	5.458	8.187	10.916	13.645	16.374	19.103	21.832	24.561
73	2.773	5.546	8.319	11.092	13.865	16.638	19.411	22.184	24.957
74	2.816	5.632	8.448	11.264	14.080	16.898	19.712	22.528	25.344
75	2.860	5.720	8.580	11.440	14.300	17.160	20.020	22.830	25.740
0.76	2.903	5.806	8.709	11.612	14.515	17.418	20.321	23.224	26.127
77	2.948	5.898	8.844	11.792	14.740	17.688	20.633	23.584	26.532
78	2.991	5.982	8.973	11.964	14.955	17.948	20.937	23.928	26.919
79	3.036	6.072	9.108	12.144	15.180	18.218	21.252	24.288	27.324
80	3.080	6.160	9.240	12.320	15.400	18.480	21.580	24.640	27.720
0.81	3.125	6.250	9.375	12.500	15.625	18.750	21.875	25.000	28.125
82	3.169	6.338	9.507	12.676	15.845	19.014	22.183	25.352	28.521
83	3.215	6.430	9.645	12.850	16.075	19.290	22.505	25.720	28.935
84	3.259	6.518	9.777	13.033	16.295	19.554	22.813	26.072	29.331
85	3.305	6.610	9.915	13.220	16.525	19.830	23.135	26.440	29.745

表 1 (續)

$H_1 + H_2$	1	2	3	4	5	6	7	8	9
0.83	3.350	6.700	10.050	13.400	16.750	20.100	23.450	26.800	30.150
87	3.396	6.792	10.188	13.584	16.981	20.376	23.772	27.168	30.564
88	3.441	6.882	10.323	13.764	17.205	20.646	24.087	27.528	30.939
89	3.487	6.974	10.461	13.948	17.435	20.922	24.409	27.893	31.383
90	3.533	7.066	10.599	14.132	17.665	21.198	24.731	28.264	31.797
0.91	3.579	7.158	10.737	14.316	17.895	21.471	25.053	28.632	32.211
92	3.625	7.250	10.875	14.500	18.125	21.750	25.375	29.000	32.625
93	3.672	7.344	11.016	14.685	18.360	22.032	25.704	29.376	33.048
94	3.718	7.436	11.154	14.872	18.590	22.368	26.026	29.744	33.462
95	3.765	7.530	11.295	15.090	18.825	22.590	26.355	30.120	33.885
0.93	3.811	7.622	11.433	15.244	19.055	22.893	26.677	30.488	34.299
97	3.859	7.718	11.577	15.436	19.295	23.154	27.013	30.872	34.731
98	3.905	7.810	11.715	15.620	19.525	23.430	27.335	31.240	35.145
99	3.953	7.906	11.859	15.812	19.765	23.718	27.671	31.624	35.577
1.00	4.000	8.000	12.000	16.000	20.000	24.000	28.000	32.000	36.000
1.01	4.048	8.093	12.144	16.192	20.240	24.288	28.336	32.383	36.432
02	4.095	8.190	12.285	16.380	20.475	24.570	28.665	32.760	36.855
03	4.144	8.288	12.432	16.576	20.720	24.854	29.008	33.152	37.296
04	4.191	8.382	12.573	16.764	20.955	25.146	29.337	33.528	37.719
05	4.240	8.480	12.720	16.930	21.200	25.440	29.680	33.920	38.180
1.03	4.288	8.576	12.834	17.152	21.440	25.728	30.016	34.304	38.592
07	4.337	8.674	13.011	17.348	21.685	26.022	30.359	34.693	39.033
08	4.385	8.770	13.155	17.540	21.925	26.310	30.695	35.089	39.455
09	4.434	8.834	13.302	17.735	22.170	26.604	31.038	35.472	39.901
10	4.483	8.966	13.449	17.932	22.415	26.898	31.381	35.894	40.347
1.11	4.532	9.064	13.593	18.128	22.660	27.192	31.724	36.256	40.788
12	4.581	9.162	13.743	18.324	22.905	27.483	32.067	36.648	41.229
13	4.631	9.262	13.893	18.524	23.155	27.786	32.417	37.048	41.679
14	4.680	9.360	14.040	18.720	23.400	28.083	32.760	37.440	42.120
15	4.730	9.460	14.190	18.920	23.650	28.380	33.110	37.840	42.570
1.16	4.779	9.558	14.337	19.116	23.895	28.674	33.453	38.231	43.011
17	4.830	9.660	14.490	19.320	24.150	28.980	33.810	38.640	43.470
18	4.879	9.758	14.637	19.516	24.395	29.274	34.153	39.032	43.911
19	4.930	9.850	14.790	19.720	24.650	29.580	34.510	39.440	44.370
20	4.980	9.960	14.940	19.920	24.900	29.880	34.830	39.840	44.820
1.21	5.031	10.062	15.093	20.124	25.155	30.186	35.217	40.248	45.279
22	5.081	10.162	15.243	20.324	25.405	30.486	35.567	40.648	45.729
23	5.133	10.266	15.399	20.532	25.655	30.798	35.931	41.064	46.197
24	5.183	10.393	15.549	20.732	25.915	31.098	36.281	41.464	46.647
25	5.245	10.470	15.705	20.940	26.175	31.410	36.645	41.880	47.115
1.26	5.283	10.572	15.858	21.144	26.430	31.716	37.002	42.288	47.574
27	5.338	10.676	16.014	21.352	26.690	32.028	37.306	42.704	48.042
28	5.389	10.778	16.167	21.555	26.945	32.334	37.723	43.112	48.501
29	5.441	10.882	16.323	21.764	27.205	32.643	38.087	43.528	48.939
30	5.493	10.983	16.479	21.972	27.465	32.958	38.451	43.944	49.437
1.31	5.545	11.090	16.635	22.180	27.725	33.270	38.815	44.360	49.905
32	5.597	11.194	16.791	22.388	27.985	33.582	39.179	44.776	50.373
33	5.650	11.300	16.950	22.600	28.250	33.900	39.550	45.200	50.850
34	5.702	11.404	17.105	22.808	28.510	34.212	39.914	45.618	51.318
35	5.755	11.510	17.265	23.020	28.775	34.530	40.285	46.040	51.795

表 1 (續)

H_1+H_2	1	2	3	4	5	6	7	8	9
1.36	5.807	11.614	17.421	23.228	29.035	34.842	40.649	46.456	52.263
37	5.861	11.722	17.583	23.444	29.305	35.106	41.027	46.888	52.749
38	5.913	11.826	17.739	23.652	29.565	35.473	41.391	47.304	53.217
39	5.967	11.934	17.901	23.868	29.835	35.802	41.769	47.736	53.703
40	6.020	12.040	18.060	24.080	30.100	36.120	42.140	48.160	54.180
1.41	6.074	12.148	18.222	24.296	30.370	36.444	42.518	48.592	54.666
42	6.127	12.254	18.381	24.508	30.635	36.762	42.889	49.016	55.143
43	6.182	12.364	18.546	24.728	30.910	37.082	43.274	49.458	55.638
44	6.235	12.470	18.705	24.940	31.175	37.410	43.645	49.880	56.115
45	6.290	12.580	18.870	25.160	31.450	37.740	44.030	50.320	56.610
1.46	6.344	12.688	19.032	25.376	31.720	38.064	44.408	50.752	57.096
47	6.399	12.798	19.197	25.596	31.995	38.394	44.793	51.192	57.591
48	6.543	12.906	19.359	25.812	32.265	38.718	45.171	51.624	58.077
49	6.506	13.016	19.524	26.032	32.540	39.048	45.556	52.054	58.572
50	6.563	13.126	19.689	26.252	32.815	39.378	45.941	52.504	59.087
1.51	6.618	13.236	19.854	26.472	33.090	39.708	46.326	52.944	59.592
52	6.673	13.346	20.019	26.692	33.365	40.038	46.711	53.384	60.057
53	6.729	13.458	20.187	26.916	33.645	40.374	47.103	53.832	60.561
54	6.784	13.568	20.352	27.136	33.920	40.704	47.488	54.272	61.056
55	6.840	13.680	20.520	27.360	34.200	41.040	47.880	54.720	61.560
1.56	6.895	13.790	20.685	27.580	34.475	41.370	48.265	55.160	62.055
57	6.952	13.904	20.856	27.808	34.760	41.712	48.664	55.616	62.568
58	7.007	14.014	21.021	28.028	35.035	42.042	49.049	56.058	63.083
59	7.067	14.134	21.201	28.268	35.335	42.402	49.499	56.538	63.603
60	7.120	14.240	21.360	28.480	35.600	42.720	49.840	56.980	64.080
1.61	7.177	14.354	21.531	28.708	35.885	43.062	50.239	57.416	64.593
62	7.233	14.466	21.699	28.932	36.165	43.396	50.631	57.864	65.097
63	7.291	14.532	21.873	29.164	36.455	43.746	51.037	58.328	65.619
64	7.347	14.694	22.041	29.388	36.735	44.082	51.429	58.776	66.123
65	7.405	14.810	22.215	29.620	37.025	44.430	51.835	59.240	66.645
1.66	7.462	14.924	22.386	29.848	37.310	44.772	52.234	59.693	67.158
67	7.520	15.040	22.560	30.080	37.600	45.120	52.640	60.160	67.680
68	7.577	15.154	22.731	30.308	37.885	45.462	53.039	60.616	68.193
69	7.635	15.270	22.905	30.540	38.175	45.810	53.445	61.080	68.715
70	7.693	15.386	23.079	30.772	38.465	46.158	53.851	61.544	69.237
1.71	7.751	15.502	23.253	31.004	38.755	46.506	54.257	62.008	69.759
72	7.809	15.618	23.427	31.236	39.045	46.854	54.663	62.472	70.281
73	7.868	15.736	23.604	31.472	39.340	47.208	55.076	62.944	70.812
74	7.926	15.852	23.778	31.704	39.630	47.556	55.482	63.408	71.334
75	7.985	15.970	23.955	31.940	39.925	47.910	55.895	63.880	71.865
1.76	8.043	16.086	24.129	32.172	40.215	48.258	56.301	64.344	72.387
77	8.103	16.206	24.309	32.412	40.515	48.618	56.721	64.824	72.927
78	8.161	16.322	24.483	32.644	40.805	48.968	57.127	65.288	73.449
79	8.221	16.442	24.663	32.884	41.105	49.326	57.547	65.768	73.969
80	8.280	16.560	24.840	33.120	41.400	49.680	57.960	66.240	74.520
1.81	8.340	16.680	25.020	33.360	41.700	50.040	58.380	66.720	75.060
82	8.399	16.798	25.197	33.596	41.995	50.394	58.793	67.192	75.591
83	8.460	16.920	25.380	33.840	42.300	50.760	59.220	67.660	76.140
84	8.519	17.038	25.557	34.076	42.595	51.114	59.633	68.152	76.671
85	8.580	17.160	25.740	34.320	42.900	51.480	60.060	68.640	77.220

表 1 (續)

1.	1	2	3	4	5	6	7	8	9
$I_{11}+I_{12}$									
1.83	8.640	17.280	25.920	34.560	43.200	51.840	60.480	69.120	77.760
87	8.701	17.402	26.103	34.804	43.505	52.206	60.907	69.608	78.309
88	8.761	17.522	26.283	35.044	43.805	52.566	61.327	70.088	78.849
89	8.822	17.644	26.466	35.288	44.110	52.932	61.754	70.576	79.398
90	8.883	17.766	26.649	35.532	44.415	53.298	62.181	71.064	79.947
1.91	8.944	17.888	26.832	35.776	44.720	53.664	62.608	71.552	80.491
92	9.005	18.010	27.015	36.020	45.025	54.030	63.035	72.040	81.045
93	9.037	18.134	27.201	36.268	45.335	54.402	63.469	72.538	81.603
94	9.128	18.256	27.384	36.512	45.640	54.768	63.896	73.024	82.152
95	9.190	18.380	27.570	36.760	45.950	55.140	64.330	73.520	82.710
1.93	9.251	18.502	27.753	37.004	46.255	55.508	64.757	74.008	83.259
97	9.314	18.628	27.942	37.256	46.570	55.884	65.198	74.512	83.825
98	9.375	18.750	28.125	37.500	46.875	56.250	65.625	75.000	84.375
99	9.438	18.876	28.314	37.752	47.190	56.628	66.066	75.504	84.942
200	9.500	19.000	28.500	38.000	47.500	57.000	66.500	76.000	85.500

表 2

路堤土方表

B=6.5M

H: 0~8.0M

m=1.5

L	1	2	3	4	5	6	7	8	9
H ₁ +H ₂									
0.01	0.033	0.088	0.099	0.132	0.165	0.198	0.231	0.264	0.297
02	0.085	0.130	0.195	0.260	0.325	0.390	0.455	0.520	0.585
03	0.098	0.198	0.294	0.392	0.490	0.588	0.683	0.784	0.882
04	0.131	0.262	0.393	0.524	0.655	0.783	0.917	1.048	1.179
05	0.164	0.328	0.492	0.656	0.820	0.984	1.148	1.312	1.476
0.06	0.196	0.392	0.588	0.784	0.980	1.176	1.372	1.568	1.764
07	0.230	0.460	0.690	0.920	1.150	1.380	1.610	1.840	2.070
08	0.262	0.524	0.786	1.048	1.310	1.572	1.834	2.096	2.358
09	0.298	0.592	0.888	1.184	1.480	1.776	2.072	2.368	2.664
10	0.329	0.658	0.987	1.316	1.645	1.974	2.303	2.632	2.961
0.11	0.363	0.726	1.089	1.452	1.815	2.178	2.541	2.904	3.267
12	0.395	0.790	1.185	1.580	1.975	2.370	2.765	3.160	3.555
13	0.429	0.858	1.287	1.718	2.145	2.574	3.003	3.432	3.861
14	0.462	0.924	1.383	1.848	2.310	2.772	3.234	3.698	4.158
15	0.498	0.992	1.488	1.984	2.480	2.976	3.472	3.968	4.464
0.16	0.530	1.060	1.590	2.120	2.650	3.180	3.710	4.240	4.770
17	0.564	1.128	1.692	2.256	2.820	3.384	3.948	4.512	5.076
18	0.597	1.194	1.791	2.388	2.985	3.582	4.179	4.778	5.373
19	0.632	1.264	1.896	2.528	3.160	3.792	4.424	5.058	5.688
20	0.665	1.330	1.995	2.660	3.325	3.990	4.655	5.320	5.985
0.21	0.700	1.400	2.100	2.800	3.500	4.200	4.900	5.600	6.300
22	0.733	1.466	2.199	2.932	3.665	4.398	5.131	5.864	6.597
23	0.768	1.538	2.304	3.072	3.840	4.608	5.378	6.144	6.912
24	0.802	1.604	2.406	3.208	4.010	4.812	5.614	6.416	7.218
25	0.836	1.672	2.508	3.344	4.180	5.016	5.852	6.688	7.524
0.28	0.870	1.740	2.610	3.480	4.350	5.220	6.090	6.960	7.830
27	0.905	1.810	2.715	3.620	4.525	5.430	6.335	7.240	8.145
28	0.939	1.878	2.817	3.758	4.695	5.634	6.573	7.512	8.451
29	0.975	1.950	2.925	3.900	4.875	5.850	6.825	7.800	8.775
30	1.009	2.018	3.027	4.038	5.045	6.054	7.063	8.072	9.081
0.31	1.044	2.088	3.132	4.178	5.220	6.294	7.368	8.352	9.393
32	1.078	2.156	3.234	4.312	5.390	6.488	7.548	8.624	9.702
33	1.114	2.228	3.342	4.456	5.570	6.684	7.798	8.912	10.023
34	1.148	2.293	3.444	4.592	5.740	6.888	8.035	9.184	10.332
35	1.184	2.368	3.552	4.733	5.920	7.104	8.288	9.472	10.656

表 2 (續)

L H ₁ + H ₂									
	1	2	3	4	5	6	7	8	9
0.33	1.219	2.438	3.657	4.870	6.095	7.314	8.533	9.752	10.971
37	1.254	2.508	3.762	5.016	6.270	7.524	8.778	10.032	11.289
38	1.289	2.578	3.847	5.156	6.445	7.734	9.023	10.312	11.601
39	1.325	2.650	3.975	5.300	6.625	7.950	9.275	10.600	11.925
40	1.360	2.720	4.080	5.440	6.800	8.160	9.520	10.880	12.240
0.41	1.396	2.792	4.188	5.584	6.980	8.376	9.772	11.168	12.564
42	1.431	2.832	4.293	5.724	7.155	8.583	10.017	11.448	12.879
43	1.467	2.934	4.401	5.838	7.335	8.802	10.269	11.736	13.203
44	1.503	3.006	4.509	6.012	7.515	9.018	10.521	12.024	13.527
45	1.539	3.078	4.617	6.153	7.695	9.234	10.773	12.312	13.851
0.46	1.574	3.148	4.722	6.296	7.870	9.444	11.018	12.592	14.166
47	1.611	3.222	4.833	6.444	8.055	9.696	11.277	12.888	14.499
48	1.646	3.292	4.938	6.584	8.230	9.876	11.522	13.168	14.814
49	1.683	3.366	5.049	6.732	8.415	10.098	11.781	13.464	15.147
50	1.719	3.438	5.157	6.875	8.595	10.314	12.033	13.752	15.471
0.51	1.755	3.512	5.268	7.024	8.780	10.539	12.292	14.048	15.894
52	1.791	3.582	5.373	7.164	8.955	10.743	12.537	14.328	16.119
53	1.828	3.653	5.484	7.312	9.140	10.938	12.793	14.624	16.452
54	1.864	3.728	5.592	7.456	9.320	11.184	13.048	14.912	16.779
55	1.901	3.802	5.703	7.604	9.505	11.406	13.307	15.208	17.109
0.56	1.938	3.876	5.814	7.752	9.690	11.628	13.560	15.504	17.442
57	1.975	3.950	5.925	7.900	9.875	11.850	13.825	15.800	17.775
58	2.011	4.022	6.033	8.044	10.055	12.063	14.077	16.083	18.099
59	2.049	4.096	6.147	8.196	10.245	12.294	14.343	16.392	18.441
60	2.085	4.170	6.255	8.340	10.425	12.510	14.595	16.680	18.765
0.61	2.123	4.246	6.369	8.492	10.615	12.738	14.861	16.984	19.107
62	2.159	4.318	6.477	8.636	10.795	12.954	15.113	17.272	19.431
63	2.197	4.394	6.591	8.788	10.985	13.182	15.379	17.576	19.773
64	2.234	4.468	6.702	8.936	11.170	13.404	15.638	17.872	20.103
65	2.271	4.542	6.813	9.084	11.355	13.626	15.897	18.168	20.439
0.66	2.308	4.616	6.924	9.232	11.540	13.848	16.156	18.464	20.772
67	2.346	4.692	7.038	9.384	11.730	14.076	16.422	18.768	21.114
68	2.383	4.766	7.149	9.532	11.915	14.298	16.681	19.034	21.447
69	2.422	4.844	7.266	9.688	12.110	14.532	16.954	19.376	21.798
70	2.459	4.918	7.377	9.836	12.295	14.754	17.213	19.672	22.131
0.71	2.497	4.994	7.491	9.988	12.485	14.982	17.479	19.976	22.473
72	2.534	5.068	7.602	10.136	12.670	15.204	17.738	20.272	22.804
73	2.573	5.146	7.719	10.292	12.855	15.438	18.011	20.584	23.157
74	2.610	5.220	7.830	10.440	12.050	15.660	18.270	20.889	23.490
75	2.649	5.298	7.947	10.593	12.245	15.894	18.543	21.192	23.811
0.76	2.687	5.374	8.061	10.748	13.435	16.122	18.809	21.496	24.183
77	2.725	5.450	8.175	10.900	13.625	16.350	19.075	21.800	24.525
78	2.763	5.526	8.289	11.052	13.813	16.578	19.341	22.104	24.897
79	2.802	5.604	8.406	11.208	14.010	16.812	19.614	22.416	25.218
80	2.840	5.680	8.520	11.360	14.200	17.040	19.880	22.720	25.530
0.81	2.879	5.758	8.637	11.516	14.395	17.274	20.153	23.032	25.911
82	2.917	5.834	8.751	11.668	14.585	17.502	20.419	23.336	26.253
83	2.956	5.912	8.878	11.824	14.780	17.736	20.692	23.648	26.603
84	2.995	5.990	8.985	11.980	14.975	17.970	20.935	23.960	26.955
85	3.034	6.038	9.102	12.133	15.170	18.204	21.238	24.272	27.303

表 2 (續)

$H_1 + H_2$	1	2	3	4	5	6	7	8	9
0.86	3.072	6.144	9.216	12.288	15.360	18.432	21.504	24.576	27.648
87	3.112	6.224	9.336	12.448	15.560	18.672	21.784	24.896	28.008
88	3.150	6.300	9.450	12.600	15.750	18.900	22.050	25.200	28.350
89	3.190	6.380	9.570	12.760	15.950	19.140	22.330	25.520	28.710
90	3.229	6.458	9.687	12.918	16.145	19.374	22.608	25.832	29.031
0.91	3.269	6.538	9.837	13.076	16.345	19.614	22.888	26.152	29.421
82	3.307	6.614	9.921	13.228	16.535	19.842	23.149	26.453	29.783
83	3.347	6.694	10.041	13.388	16.735	20.082	23.429	26.776	30.123
84	3.388	6.772	10.158	13.544	16.930	20.316	23.702	27.088	30.474
85	3.428	6.852	10.278	13.704	17.130	20.559	23.982	27.408	30.834
0.96	3.468	6.932	10.398	13.864	17.330	20.798	24.262	27.728	31.194
87	3.503	7.012	10.518	14.024	17.530	21.038	24.542	28.048	31.554
88	3.545	7.090	10.635	14.180	17.725	21.270	24.815	28.390	31.905
89	3.583	7.172	10.758	14.344	17.930	21.518	25.102	28.688	32.274
1.00	3.625	7.250	10.875	14.500	18.125	21.750	25.375	29.000	32.625
1.01	3.666	7.332	10.998	14.664	18.330	21.998	25.682	29.328	32.964
02	3.705	7.410	11.115	14.820	18.525	22.230	25.935	29.640	33.345
03	3.746	7.492	11.238	14.984	18.730	22.476	26.222	29.938	33.714
04	3.788	7.572	11.358	15.144	18.930	22.716	26.502	30.288	34.074
05	3.826	7.652	11.478	15.304	19.130	22.956	26.782	30.608	34.434
1.06	3.866	7.732	11.598	15.464	19.330	23.198	27.082	30.928	34.794
07	3.907	7.814	11.721	15.628	19.535	23.442	27.349	31.253	35.163
08	3.947	7.894	11.841	15.788	19.735	23.682	27.629	31.576	35.523
09	3.989	7.978	11.967	15.958	19.945	23.934	27.923	31.912	35.901
10	4.029	8.058	12.087	16.116	20.145	24.174	28.203	32.232	36.267
1.11	4.070	8.140	12.210	16.280	20.350	24.420	28.493	32.590	36.630
12	4.110	8.220	12.330	16.440	20.550	24.660	28.770	32.880	36.990
13	4.152	8.304	12.458	16.608	20.760	24.912	29.064	33.216	37.338
14	4.192	8.384	12.578	16.768	20.960	25.152	29.344	33.536	37.728
15	4.234	8.468	12.702	16.938	21.170	25.404	29.638	33.872	38.108
1.16	4.275	8.550	12.825	17.100	21.375	25.650	29.925	34.200	38.475
17	4.316	8.632	12.948	17.264	21.580	25.893	30.212	34.528	38.844
18	4.357	8.714	13.071	17.428	21.785	26.142	30.499	34.858	39.213
19	4.399	8.798	13.197	17.595	21.995	26.394	30.793	35.192	39.591
20	4.440	8.880	13.323	17.760	22.200	26.640	31.080	35.520	39.960
1.21	4.482	8.964	13.446	17.928	22.410	26.892	31.374	35.856	40.338
22	4.523	9.048	13.569	18.092	22.615	27.138	31.661	36.184	40.707
23	4.565	9.130	13.695	18.260	22.825	27.390	31.955	36.520	41.085
24	4.607	9.214	13.821	18.428	23.035	27.642	32.249	36.856	41.463
25	4.649	9.298	13.947	18.598	23.245	27.894	32.543	37.192	41.841
1.26	4.690	9.380	14.070	18.760	23.450	28.140	32.830	37.520	42.210
27	4.733	9.466	14.199	18.932	23.665	28.398	33.131	37.834	42.597
28	4.774	9.548	14.322	19.097	23.870	28.644	33.418	38.192	42.986
29	4.817	9.634	14.451	19.268	24.085	28.902	33.719	38.538	43.353
30	4.859	9.718	14.577	19.438	24.295	29.154	34.013	38.872	43.731
1.31	4.902	9.804	14.706	19.608	24.510	29.412	34.314	39.216	44.118
32	4.943	9.886	14.829	19.772	24.715	29.658	34.601	39.544	44.487
33	4.985	9.972	14.958	19.944	24.930	29.916	34.902	39.888	44.874
34	5.028	10.058	15.084	20.112	25.140	30.188	35.198	40.224	45.252
35	5.071	10.142	15.213	20.284	25.355	30.428	35.497	40.568	45.639

表 2 (續)

$H_1 + H_2$	1	2	3	4	5	6	7	8	9
1.36	5.114	10.228	15.342	20.456	25.570	30.684	35.798	40.912	46.026
37	5.137	10.314	15.471	20.628	25.785	30.942	36.099	41.256	46.413
38	5.199	10.398	15.597	20.793	25.995	31.194	36.393	41.592	46.791
39	5.243	10.468	15.729	20.972	26.215	31.458	36.701	41.944	47.187
40	5.285	10.570	15.855	21.140	26.425	31.710	36.995	42.280	47.565
1.41	5.329	10.658	15.987	21.316	26.645	31.974	37.303	42.632	47.931
42	5.371	10.742	16.113	21.481	26.855	32.225	37.597	42.968	48.339
43	5.415	10.830	16.245	21.660	27.075	32.490	37.905	43.320	48.735
44	5.458	10.916	16.374	21.832	27.290	32.748	38.206	43.664	49.122
45	5.501	11.002	16.503	22.004	27.505	32.003	38.507	44.008	49.509
1.46	5.544	11.088	16.632	22.176	27.720	33.264	38.808	44.352	49.893
47	5.588	11.176	16.764	22.352	27.940	33.528	39.116	44.704	50.292
48	5.631	11.262	16.893	22.524	28.155	33.783	39.417	45.048	50.679
49	5.676	11.352	17.028	22.704	28.380	34.056	39.732	45.408	51.084
50	5.719	11.438	17.157	22.876	28.595	34.314	40.033	45.752	51.471
1.51	5.763	11.526	17.289	23.052	28.815	34.578	40.341	46.104	51.867
52	5.800	11.612	17.418	23.224	29.030	34.836	40.642	46.448	52.254
53	5.851	11.702	17.553	23.404	29.255	35.108	40.957	46.808	52.650
54	5.894	11.788	17.682	33.576	29.470	35.364	41.258	47.152	53.046
55	5.939	11.878	17.817	23.756	29.695	35.634	41.573	47.512	53.451
1.56	5.983	11.998	17.949	23.932	29.915	35.898	41.881	47.854	53.847
57	6.027	12.054	18.081	24.108	30.135	36.162	42.189	48.216	54.243
58	6.071	12.142	18.213	24.284	30.355	36.426	42.497	48.568	54.639
59	6.116	12.232	18.348	24.464	30.580	36.696	42.812	48.928	55.044
60	6.160	12.320	18.480	24.640	30.800	36.960	43.120	49.280	55.440
1.61	6.205	12.410	18.615	24.820	31.025	37.230	43.435	49.640	55.845
62	6.249	12.498	18.747	24.993	31.245	37.494	43.743	49.992	56.241
63	6.294	12.588	18.882	25.176	31.470	37.764	44.058	50.352	56.648
64	6.339	12.678	19.017	25.356	31.695	38.034	44.373	50.712	57.051
65	6.384	12.768	19.152	25.526	31.920	38.304	44.688	51.072	57.458
1.66	6.428	12.856	19.284	25.712	32.140	38.563	44.996	51.424	57.852
67	6.474	12.948	19.422	25.896	32.370	38.844	45.318	51.792	58.246
68	6.518	13.033	19.554	26.072	32.590	39.108	45.626	52.144	58.692
69	6.564	13.128	19.692	26.256	32.820	39.384	45.948	52.512	59.078
70	6.609	13.218	19.827	26.433	33.045	39.654	46.263	52.872	59.481
1.71	6.655	13.310	19.955	26.620	33.275	39.930	46.585	53.240	59.895
72	6.699	13.398	20.097	26.798	33.495	40.194	46.893	53.592	60.291
73	6.745	13.490	20.235	26.980	33.725	40.470	47.215	53.960	60.705
74	6.790	14.580	20.370	27.160	33.950	40.740	47.530	54.320	61.110
75	6.836	13.672	20.508	27.344	34.180	41.016	47.852	54.688	61.524
1.76	6.882	13.764	20.646	27.528	34.410	41.292	48.174	55.056	61.938
77	6.928	13.856	20.784	27.712	34.640	41.568	48.498	55.424	62.352
78	6.973	13.948	20.919	27.892	34.835	41.838	48.811	55.784	62.757
79	7.019	14.038	21.057	28.078	35.095	42.114	49.133	56.152	63.171
80	7.065	14.130	21.195	28.260	35.325	42.390	49.455	56.520	63.585
1.81	7.112	14.224	21.336	28.448	35.560	42.672	49.784	56.896	64.008
82	7.157	14.314	21.471	28.628	35.785	42.942	50.099	57.256	64.413
83	7.204	14.408	21.612	28.816	36.020	43.224	50.428	57.632	64.833
84	7.250	14.500	21.750	29.000	36.250	43.500	50.750	58.000	65.250
85	7.293	14.592	21.888	29.184	36.480	43.770	51.072	58.398	65.634

表 2 (續)

$H_1 + H_2$	1	2	3	4	5	6	7	8	9
1.85	7.342	14.684	22.026	29.398	36.710	44.052	51.394	58.738	66.078
87	7.389	14.778	22.167	29.558	36.945	44.334	51.723	59.112	66.501
88	7.435	14.870	22.305	29.740	37.175	44.610	52.045	59.480	66.815
89	7.483	14.966	22.449	29.932	37.415	44.896	52.381	59.834	67.347
90	7.529	15.058	22.587	30.118	37.645	45.174	52.703	60.232	67.761
1.91	7.576	15.152	22.728	30.304	37.880	45.456	53.032	60.608	68.184
92	7.622	15.244	22.866	30.488	38.110	45.732	53.354	60.978	68.598
93	7.670	15.340	23.010	30.680	38.350	46.020	53.690	61.390	69.030
94	7.716	15.432	23.148	30.834	38.580	46.298	54.012	61.728	69.444
95	7.764	15.528	23.292	31.058	38.820	46.584	54.348	62.112	69.876
1.98	7.811	15.622	23.433	31.244	39.055	46.896	54.677	62.488	70.299
97	7.858	15.718	23.574	31.432	39.290	47.148	55.008	62.894	70.722
98	7.905	15.810	23.715	31.620	39.525	47.430	55.335	63.240	71.145
99	7.953	15.903	23.859	31.812	39.765	47.718	55.671	63.624	71.577
2.00	8.000	16.000	24.000	32.000	40.000	48.000	56.000	64.000	72.000
2.01	8.048	16.093	24.144	32.192	40.240	48.288	56.338	64.384	72.432
02	8.095	16.190	24.285	32.380	40.475	48.570	56.685	64.760	72.855
03	8.143	16.288	24.429	32.572	40.715	48.858	57.001	65.144	73.287
04	8.191	16.382	24.573	32.764	40.955	49.148	57.337	65.528	73.719
05	8.239	16.478	24.717	32.958	41.195	49.434	57.673	65.912	74.151
2.08	8.283	16.572	24.858	33.144	41.430	49.728	58.002	66.288	74.574
07	8.335	16.670	25.005	33.340	41.675	50.010	58.345	66.680	75.015
08	8.382	16.764	25.146	33.528	41.910	50.292	58.674	67.058	75.438
09	8.431	16.862	25.293	33.724	42.155	50.586	59.017	67.448	75.879
10	8.479	16.958	25.437	33.918	42.395	50.874	59.353	67.832	76.311
2.11	8.528	17.058	25.584	34.112	42.640	51.168	59.698	68.224	76.752
12	8.575	17.150	25.725	34.300	42.875	51.450	60.025	68.600	77.175
13	8.624	17.248	25.872	34.496	43.120	51.744	60.388	68.992	77.616
14	8.672	17.344	26.016	34.688	43.360	52.032	60.704	69.376	78.048
15	8.721	17.442	26.163	34.884	43.605	52.328	61.047	69.768	78.489
2.18	8.770	17.540	26.310	35.080	43.850	52.620	61.390	70.160	78.930
17	8.819	17.638	26.457	35.276	44.095	52.914	61.733	70.552	79.371
18	8.867	17.734	26.601	35.468	44.335	53.202	62.069	70.936	79.803
19	8.917	17.834	26.751	35.668	44.585	53.502	62.419	71.336	80.253
20	8.965	17.930	26.895	35.890	44.825	53.790	62.755	71.120	80.685
2.21	9.015	18.030	27.045	36.090	45.075	54.090	63.105	72.120	81.135
22	9.063	18.128	27.189	36.252	45.315	54.378	63.441	72.504	81.587
23	9.113	18.226	27.339	36.452	45.595	54.678	63.791	72.904	82.017
24	9.162	18.324	27.483	36.648	45.810	54.972	64.134	73.296	82.458
25	9.211	18.422	27.633	36.844	46.055	55.266	64.477	73.688	82.899
2.28	9.260	18.520	27.780	37.040	46.300	55.560	64.820	74.080	83.340
27	9.310	18.620	27.930	37.240	46.550	55.890	65.170	74.480	83.790
28	9.359	18.718	28.077	37.436	46.795	56.154	65.513	74.872	84.231
29	9.410	18.820	28.230	37.640	47.050	56.460	65.870	75.280	84.690
30	9.459	18.918	28.377	37.836	47.295	56.754	66.213	75.672	85.131
2.31	9.509	19.018	28.527	38.036	47.545	57.054	66.563	76.072	85.581
32	9.558	19.118	28.674	38.232	47.790	57.348	66.903	76.480	86.022
33	9.609	19.218	28.827	38.436	48.045	57.654	67.263	76.872	86.481
34	9.658	19.316	28.974	38.632	48.290	57.948	67.606	77.264	86.922
35	9.709	19.418	29.127	38.838	48.545	58.254	67.993	77.672	87.381