

PRACTICAL EARTHWORK TABLES

AND

CALCULATIONS OF BANKS AND CUTS MADE EASY

WITH NUMEROUS ILLUSTRATIONS AND EXAMPLES

DESIGNED FOR THE USE OF STUDENTS
IN ENGINEERING GENERALLY
SPECIALLY FOR THE USE OF ENGINEERS
AND ENGINEER-SUBORDINATES

BY

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PREFACE.

No apology is necessary for the appearance of a new book on *Earthwork Tables and Calculations* in a continent like India. These Tables have been prepared with a view to minimise calculations usually necessary in the preparation of estimates for roads, railways, canals, river embankments and canal distributaries, etc., and they will be found accurate and labor-saving in many ways.

The requirements of the Public Works Department and the District Boards are to obtain correct figures for areas of cross-sections for heights increasing by one-hundredth of a foot, and the Slope Tables have been calculated for the first 34 feet for heights increasing by 0.01 foot, and then up to 70 feet increasing by 0.1 foot, and a method has been shown how to obtain figures to two places of decimals as in former cases, from figures given for the latter, in Art. 23, p. 52.

The Engineers and their subordinates will find, with the aid of these Tables, that their labor is reduced to one-eighth if not to one-tenth, and their attention is especially drawn to Arts. 36 and 37, pages 141, 145, Ex. 28 V ; and to Art. 39, Ex. 29 (iii), which show methods of calculation which are at once extremely simple, accurate and much labor-saving.

Corrections and suggestions for improvements in future edition of this work are invited and will be thankfully accepted.

Calcutta, May, 1918.

N. N. MITRA.

ERRATA.

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..	7	..	15 .. $(S + S_1)$..	.. $(S_c + S)$.
..	7	..	17 .. $33^{\circ}7'$..	.. $33^{\circ}7'$.
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..	7	..	21 .. $20^{\circ}104'$..	.. $20^{\circ}104'$.
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..	50	Art 20, Line 7 ..	.. S_h ..	.. S_h .
..	51	.. 21, ..	10 .. Ex 9 ..	.. Ex. 9a.
..	52	Line ...	11 .. heights ..	.. bases.
..	52	..	15 .. 6_i ..	.. 6
..	52	Eqn. 33 ..	 $\frac{1}{2}S(H+h)^2 - H^2$..	.. $C = \frac{1}{2}S \left\{ (H+nh)^2 - H^2 \right\}$
..	52	.. 34 ..	.. $\frac{1}{2}S(2nH+n^2)$..	.. $\frac{1}{2}S(2nH+0.01n^2)$
..	52	Line after Eqn. 34., increasing, C,	by .1 ..	.. increasing by 0.1.

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COIMBATORE

PRACTICAL EARTHWORK TABLES AND
CALCULATIONS.

CHAPTER I.—INTRODUCTION.

1. **Earthwork**, in its widest sense, comprehends excavation in rock, as well as in the looser materials of the earth's crust. Earthwork is of two kinds—excavation or cut, and embankment or fill.

Cut or Cutting is excavation under the surface of the earth and its removal; for instance, digging out the trenches for foundations of buildings, for making drains and construction of canals.

Embankment or Fill is used to denote any large heap of earth collected together from excavations and built to a definite shape in a line; for example, roads and railways raised above ground across valleys and river embankments to protect adjoining land from floods, etc.

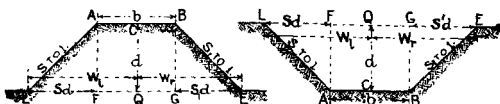
2. **The Boundaries of Cross-Section of a Piece of Earthwork** in general are as follows:—

(1) **The Base or Formation**, AB, (Figs. 1, 2, 3, 4, 5, 6) being a surface nearly, and sometimes exactly horizontal, which forms the bottom of a cut or the top of a bank, and is marked *b*.

(2) **The Sides or Slopes**, AL and BE, (Figs. 1, 2, 3, 4, 5, 6) connecting the base with the natural surface.

(3) **The Original or Natural Surface of the Ground**, EL, (Figs. 1, 2, 3, 4, 6); and EGI (Fig. 5) forming the top of a cutting, or the bottom of an embankment.

In most cases, in practice, three sides of a cross-section are fixed by the conditions of the problem. These are the side-slopes in both cuts and fills, the bottom in cuts and the top in embankments or fills. It then remains simply to find where the side-slopes will cut the natural surface, and also the form of the surface line on the given section. Inasmuch as pegs are usually set at the points where the side-slopes cut the surface, whether in cut or fill, such pegs are called *slope-pegs*, and they are set at the time the profiling is done.



Figs. 1 and 2.—Cross-Sections of Bank and Cutting on Level Ground.

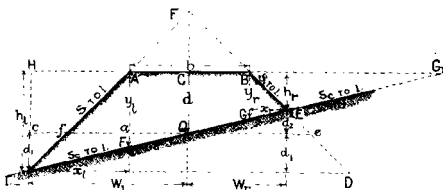


Fig. 3.—Cross-Section of Bank or Cutting on Cross-Slope.

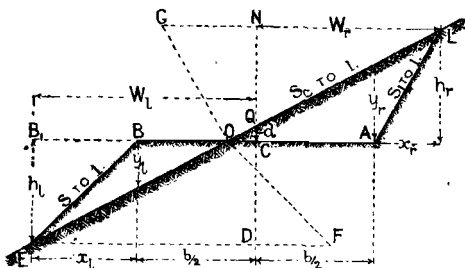


Fig. 4.—Cross-Section of a Road along a Hill Side, partly in Bank and partly in Cut.

3. The Side-slopes are defined as *so much horizontal to one vertical*. Thus a slope of $1\frac{1}{2}$ to 1 means that the horizontal component of a given portion of a slope line is $1\frac{1}{2}$ times its vertical component. They are shown, in Figs. 1—6, as S to 1, S_1 to 1.

Side-slopes are usually expressed as to 1; $\frac{1}{2}$ to 1, $\frac{3}{4}$ to 1, 1 to 1, $1\frac{1}{2}$ to 1, 2 to 1, 3 to 1, etc.

The Slope-ratio is the ratio of the horizontal to the vertical component and is hence always the same as the first number in

the slope-definition. Thus for a slope of $1\frac{1}{2}$ to 1, the slope-ratio is $1\frac{1}{2}$. For S to 1, the slope-ratio is S.

4. Side-long Ground.—If the ground, over which an embankment is made, or in which a canal is excavated, slopes sideways, i.e., has an inclination across or at right angles to the centre line of work, it is then called a *side-long ground*, or is said to have a *transverse-slope*, whereas if it has a slope in the direction of the line of work it is said to have a *longitudinal-slope*. In Figs. 3, 4 and 6, S_1 to 1 shows ratio of Transverse or Cross-slope.

5. Natural Surface of Ground.—In Figs. 1-2, the natural surface is horizontal: and in Figs. 3-4, it slopes sideways.

6. Cuts and Fills.—Figs. 2 and 6 represent cuts. It is only necessary to conceive them to be turned upside down to represent fills or embankments which are indicated by Figs. 1 and 3. Fig. 4 represents a piece of earthwork, of which one side, OAL, is in *cut*, called *side-cut*, and the other, OBE, in *fill*.

7. Side-widths or Distances-out are horizontal distances from a given point, Q, in Figs. 1—4, in the centre line, as marked on the ground, to each edge, E or L, of the cut or fill, and are marked by W_r and W_l . Each side-width consists of the half-width of the bottom of cut or top of bank fixed by the design of the work and the horizontal width of one slope obtained by calculation or from drawing.

8. Centre-height and Side-heights.—The point vertically below, Q, in the case of cut, or above Q in the case of embankment, in the centre of the bottom-width of cut or top-width of fill at the *Formation Level* is marked by C. The depth, CQ , is called the *centre-height* and marked by d . Similarly h_r and h_l are the *side-heights* on the right and left edges of the piece of earthwork (Figs. 3=4) on side-long ground.

9. Calculation of Breadth of a Slope and Side-widths when the Natural Ground is Level Across.—In Figs. 1-2, LF and GE are breadths of slopes which are S to 1 and S_1 to 1. Hence in accordance with the definition of slopes

$$LF = Sd; GE = S_1d. \quad \dots \quad (1)$$

$$\therefore \text{Side-widths, } LQ = b/2 + Sd; \text{ and } QE = b/2 + S_1d. \quad \dots \quad (2)$$

$$\text{When } S = S_1, LQ = QE = b/2 + Sd. \quad \dots \quad (3)$$

Ex. 1. If the depth of a bank having 8' top is 10' and the side-slopes are 3 to 1 and 2 to 1 respectively; $LF = 3 \times 10 = 30'$; $GE = 2 \times 10 = 20'$; $LQ = 30 + 4 = 34'$; $QE = 20 + 4 = 24'$.

10. Calculation of Breadth of Side-slopes and Side-widths, extreme Side-heights and Heights at Edges of Base when the Ground has an Uniform Transverse-slope intersecting the Base.—The datas (Fig. 3) are b, d, S to 1, not S_1 to 1 and S_c to 1. Find the differences of level between the centre peg, Q , and the edge pegs, L and E , i.e., d_1 and d_2 ; the heights at edges of base, y_r and y_l ; and side-heights, h_l and h_r ; and widths of slope, x_r and x_l ; and side-widths, W_l and W_r .

The side-heights at edges of base, $y_l = d + b/2S_c$; ... (4)

$$y_r = d - b/2S_c. \quad \dots (5)$$

$W_l =$ Left side-width $= d_1 S_c = cQ = cf + fa + aQ = Sd_1 + Sd + \frac{1}{2}b$.

$$\therefore d_1 = \frac{\frac{1}{2}b + Sd}{S_c - S}; \text{ similarly } d_2 = \frac{\frac{1}{2}b + S_1d}{S_c + S_1}. \quad \dots (6 \& 7)$$

$$\therefore W_l = \frac{S_c(\frac{1}{2}b + Sd)}{S_c - S}; \text{ and similarly } W_r = \frac{S_c(\frac{1}{2}b + S_1d)}{S_c + S_1}. \quad \dots (8 \& 9)$$

$$\therefore \text{Depth of Level Bank, } AB DL = h_l = d + d_1 = d + \frac{\frac{1}{2}b + Sd}{S_c - S} = \frac{dS_c - \frac{1}{2}b}{S_c - S} \quad (10)$$

$$\text{Depth of } \triangle \text{ below Cross-slope, } EL = d_1 + d_2 = \frac{\frac{1}{2}b + Sd}{S_c - S} + \frac{\frac{1}{2}b + S_1d}{S_c + S_1}. \quad (11)$$

$$\text{Right Side-height} = h_r = d - d_2 = \frac{dS_c - \frac{1}{2}b}{S_c + S_1} \quad \dots \quad (12)$$

$$x_l = \frac{S(S_c d + \frac{b}{2})}{S_c - S}, \text{ and } x_r = \frac{S_1(S_c d - \frac{b}{2})}{S_c + S_1} \quad \dots \quad (13 \& 14)$$

These dimensions are required for finding the areas of cross-sections as will be shown later on.

Ex. 2. The top width of an embanked road is 24', height of bank 14'86', and side slopes $1\frac{1}{2}$ to 1. The bank is on a side-long ground having a cross-slope of 4 to 1; required the depth of the level bank $AB DL$ and the height of the $\triangle$, LED , and the side-widths W_l and W_r . (Fig. 3.)

$$\therefore d_1 = \frac{12 + 22.29}{2.5} = 13.716'; \text{ and } d_2 = \frac{12 + 22.29}{5.5} = 6.234'.$$

$$\therefore W_l = 4 \times 13.716 = 54.864'; W_r = 4 \times 6.234 = 24.936'.$$

$$\therefore d + d_1 = 14.86 + 13.716 = 28.576'; \text{ and } d_1 + d_2 = 13.716 + 6.234 = 19.95'.$$

11. Graphic Method of Equalising a Warped Surface to a Sloping Surface.—When the cuttings are in side-hill, they sometimes have to be equalised, for which Fig. 5 is given, which represents the section of a bog-backed cutting, $ABEFGHI$, in which the crooked surface, $EFGHI$, is to be replaced by the straight sloping line, EL . To draw EL , so that the area of the cross-section, $ABEFGHI$, may be equal to the area of the figure, $ABEL$, needs but little geometrical skill; a thread applied across the crooked lines, when the inequalities are not great, will, in most cases, be sufficient.

to determine EL. When the inequalities are great, EL can be determined easily with the aid of a parallel ruler. Thus draw HJ parallel to IG; through G draw GK parallel to FJ; through F draw FL parallel to EK; join EL which is the *equalising line*.

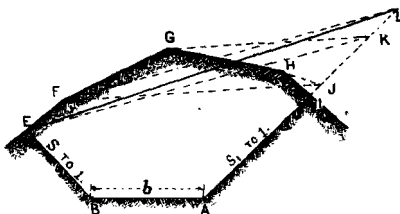


Fig. 5.—Equalising a Warped Surface into a Slope Surface.

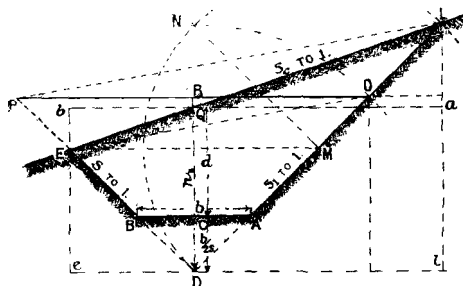


Fig. 6.—Equalising a Cross-Section on a Cross-Slope into a Cross-Section on a Level Surface.

The reasoning for the above steps will be at once seen on reference to Prob. XII., p. 165, of the Author's "*Manual of Surveying*," First Edition, where the method of reducing a polygon to a triangle is described.

12. Graphic Method of Equalising a Cross-Section on a Cross-Slope-Surface to a Cross-Section on a Level Surface, and to find the Depth of Equivalent Level Cutting.
—Finally the cross-slope surface line, EL, is to be replaced by a horizontal equivalent, PO (Fig. 6), so that the area OPBA = ABEL

as under :—Let EL be the equalising slope line. On DL describe a semi-circle, DNL; draw EM parallel to AB, and MN perpendicular to DL cutting the semi-circle at N; with DN as radius describe the arc NO, through O draw OP parallel to ME or AB; then the area of OPBA = area of ABEL, and CR is the height of the equivalent level cutting required. When this construction is accurately performed, then LP is parallel to EO. This should be checked by a parallel ruler to find if the lines LP and EO are parallel or not; if the lines be not parallel, the construction should be repeated. * CR may be measured by means of the plotting scale with which the figure was drawn, or it may be obtained as under :—

13. Method of Mathematical Calculation of Depth of Equivalent Level Cutting.—When CQ = depth under the centre line to C (Fig. 6), the width of roadway, AB, and the slopes of EL, AL, BE are given, the depth CR of the equivalent level cutting ABPO can be ascertained thus. Let the slope EL be represented by S_c to 1 and of DL or DE by S to 1. Also let DQ be represented by n , CQ by d , then by similar Δ s :

$$S : 1 :: DL : DL/S = Ll ; \quad S_c : 1 :: DL : DL/S_c = La ;$$

$$\therefore n + DL/S_c = DL/S ; \quad \therefore DL = nS S_c / (S_c - S).$$

$$\text{Again } S : 1 :: De : De/S = Ee ; \quad S_c : 1 :: De : De/S_c = Eb ;$$

$$\therefore n - De/S_c = De/S ; \quad \therefore De = nS S_c / (S_c + S) ; \text{ and } Ee = n S_c / (S_c + S),$$

$$Ll = n S_c / (S_c - S). \text{ But } DL^2 = Ll^2 + L^2 ; \text{ and } DE^2 = Ee^2 + E^2 ;$$

$$\therefore DL = \sqrt{(n^2 S^2 S_c^2 + n^2 S_c^2) / (S_c - S)}^{\frac{1}{2}} ; \quad \text{and}$$

$$DE = \sqrt{(n^2 S^2 S_c^2 + n^2 S_c^2) / (S_c + S)}^{\frac{1}{2}} ;$$

But because EO is parallel to PL, one of the sides of the Δ PLD ;

$$\therefore PE/ED = LO/OD \text{ (Euc. VI. 2.)} ;$$

$$\therefore PE/ED + 1 = LO/OD + 1 ; \therefore PD/DE = DL/OD ; \therefore PD = OD ;$$

$$\therefore PD = (DE \times DL)^{\frac{1}{2}} = \sqrt{n^2 S_c^2 (1 + S^2) / (S_c + S) (S_c - S)}^{\frac{1}{2}}.$$

$$\text{But } PD : DR :: (1 + S_c^2)^{\frac{1}{2}} : 1 ; \therefore DR = n S_c / (S_c^2 + S^2)^{\frac{1}{2}} ;$$

$$\therefore \text{Depth of Equivalent Cutting} = CR = DR - CD$$

$$= n S_c / (S_c^2 + S^2)^{\frac{1}{2}} - \frac{b}{2S}.$$

$$\therefore n = d + \frac{b}{2S} \therefore CR = \left\{ \left(d + \frac{b}{2S} \right) S_c / (S_c^2 + S^2)^{\frac{1}{2}} \right\} - \frac{b}{2S}. \quad (15)$$

Ex. 3. Let the roadway, AB, be 24' wide, with side slopes of $1\frac{1}{2}$ to 1; and the ground to incline transversely at an angle of 20° ; with a depth CQ at Q of 20'; required CR the depth of the equivalent level cutting ABPO. (See Ex. 1)

Since cot. $20^\circ = 2.747$, the slope of EL is 2.747 to 1 ;

$\therefore S_c = 2.747$; $S = 1.5$; and $CD = b/2S = 24/2 \times 1.5 = 8'$

$\therefore DQ = n = 20 + 8 = 28'$; $S_c^2 = 7.546$, $S^2 = 2.25$.

$$\therefore DR = \frac{28 \times 2.747}{(7.546 - 2.25)^{1/2}} = 33.44', \text{ and } CR = 33.44, - 8 = 25.44'.$$

Ex. 4. Let the road be 18' wide with side-slopes of 2 to 1, the cross-slope of the ground is 4 to 1, and the depth over the centre of road $CQ = 12'$; what is the depth of an equivalent level cutting ? (Fig. 6.)

$d = 12'$, $CD = \frac{1}{2} \times \frac{1}{2} = 4.5'$; $n = 12 + 4.5 = 16.5'$; $S_c = 4$; $S = 2$.

$$\therefore DR = \frac{n S_c}{(S_c^2 - S^2)^{1/2}} = \frac{16.5 \times 4}{(4^2 - 2^2)^{1/2}} = \frac{66}{3.464} = 19.053'$$

$$\therefore CR = 19.053 - 4.5 = 14.553'.$$

Ex. 5. The breadth of the roadway is $27' 8''$, with side-slopes of $36^\circ 40'$ and a transverse equalising ground slope of $21^\circ 15'$; the depth of the station from the centre of road $45' 6''$; what is the depth of a level cutting of equal area ?

Nat. cot. $36^\circ 40' = 1.3432 = S$; (Fig. 6).

Nat. cot. $21^\circ 15' = 2.5715 = S_c$, $(S + S_c) = 3.9147$, $(S_c - S) = 1.2283$.

$$\therefore CR = \left\{ (46.6 + \frac{27.8}{2.6864}) \cdot 2.5715 / (3.9147 \times 1.2283)^{1/2} \right\} - \frac{27.8}{2.6864} = 55.262'.$$

Ex. 6. The breadth of the roadway = $33' 7''$; side-slopes are 19 : 7, and a transverse slope of 23 : 3 ; depth of the embankment from the centre of road = $18' 4''$; what is the depth of the level embankment of equal cross-area ?

$S_c = 23/3 = 7.6667$, $S = 19/7 = 2.7143$; $\therefore (S_c + S) = 10.381$, $(S_c - S) = 4.9524 =$

$$\therefore CR = \left\{ (18.4 + \frac{33.7}{5.4286}) \cdot 7.6667 / (10.381 \times 4.9524)^{1/2} \right\} = 20' 104''.$$

14. Calculation of Breadth of Side-slopes, Side-widths, Heights at Edges of Base, and Extreme Side-heights, when the Ground has an Uniform Transverse Slope intersecting the Base between the Centre Line and the Edge of Earthwork, as at O in Fig. 4. Datas are: d , b , S to 1, S_1 to 1, S_c to 1.

Here $QC = d$; $OA = OC + CA = dS_c + \frac{1}{2}b$... (16)

For the cutting OAL , we have $y_r = OA/S_c = (dS_c + \frac{1}{2}b)/S_c$... (17)

and $h_r = x_r/S$; and $(OA + x_r) : h_r :: S_c : 1$;

$\therefore S(dS_c + \frac{1}{2}b) = x_r (S_c - S)$; $\therefore x_r = S (dS_c + \frac{1}{2}b)/(S_c - S)$

and $h_1 = (dS_c + \frac{1}{2}b)/(S_c - S) = CN$... (18)

Side-width $NL = OA + x_r = \frac{1}{2}b + S_c (\frac{1}{2}b + Sd)/(S_c - S)$... (19)

For the Fill, OBE , we have, $x_1 = h_1 S_1$, and $BO = \frac{1}{2}b - dS_c$; and

$h_1 : BO + x_1 :: 1 : S_c$; $\therefore h_1 = (\frac{1}{2}b - dS_c)/(S_c - S_1) = EB_1$... (20)

$\therefore x_1 = S_1 (\frac{1}{2}b - dS_c)/(S_c - S_1)$... (21)

and $y_1 = (\frac{1}{2}b - dS_c)/S_c$... (22)

Side-width $CB_1 = OC + BO + x_1 = \frac{1}{2}b + S_1 (\frac{1}{2}b - dS_c)/(S_c - S_1)$ (23)

Ex. 7. A Hill road 20' wide is to be made partly in bank and partly in cutting in side-long ground with a cross-slope of 2 to 1. The side-slope of the cut to be $\frac{1}{2}$ to 1, and that of the bank 1 to 1. The depth of cut at the centre of the road is 1'. Find the side-heights and widths of slope, width of top of bank and bottom of cut and side-widths. (Fig. 4.)

Here $d = 1'$; $OA = CA + OC = 10 + 2 \times 1 = 12'$; $BO = 8'$.

For cut. $x_1 = \frac{1}{2} (1 \times 2 + 10) / (2 - \frac{1}{2}) = 4'$; $h_1 = 4 / \frac{1}{2} = 8'$.

Right side-width = $10 + 4 = 14'$.

For fill, $x_2 = 1 (10 - 1 \times 2) / (2 - 1) = 8'$; $h_2 = 8'$.

Left side-width = $8 + 8 + 2 = 18'$.

15. Ordinary Method of Finding Contents of Banks and Cuts.—The ordinary method of calculating the quantity of earthwork required in a bank (fill), or cut is to take

(a) Longitudinal-section levels along the centre line of the bank, or cut, on pegs driven and spaced at regular intervals, usually of 100 feet ;

(b) Cross-sections of the ground at these points, at right angles to the centre line, and then special intermediate cross-sections if the irregularities of the ground seem to require it ;

(c) To reduce the levels, plot the sections and to draw the outline of the bank or cut on them, and then to ascertain their areas required at the pegs, the cubic contents of the cut or bank being computed from the areas so obtained by the prismoidal or other formulas deduced in Chapter V.

This method entails a great deal of labor.

16. New Earthwork Tables prepared to minimise Drawing and Computation Work.—The annexed Tables are prepared to minimise labor as much as possible in the computations required. When the ground along the cross-section line is fairly level, or when the slope is *gradual* and *uniform*, cross-sections need not be taken, and the necessary computations can be made by the aid of the tables. Where the ground slopes *transversely* and *considerably* or where the surface is irregular or hog-backed, the irregular sections should be reduced by equalising lines, even on preliminary survey, to a level so that the level section may have the same area as the irregular one. The Tables are designed to give areas of cross-sections on level ground only in square feet and to give the cubic contents in cubic feet.

17. Contents of Cuts or Fills.—In the accompanying Tables the contents are suited for the case in which the unit of volume is the cube described upon the linear unit. If the dimensions are taken to be in feet, the quantities of earthwork will be in cubic feet, if in yards the volumes will be in cubic yards. When the volumes are obtained in cubic feet, they are to be divided by 27 to reduce them to cubic yards, if necessary, as in English or American practice.

Chapter II.—Preparation of Tables for the Contents of the Central Portion and Table I.

18. Calculation of the Area of the Cross-Section of a Bank, or of a Cut, when the Ground is Level Across.—The area consists of the centre portion, ABGF, and the two slope portions ΔS , ALF + BGE. Thus, for any depth d , and bottom or top width, b , and side-slopes S to 1 and S_1 to 1 (Figs. 1-2):

The Area of the Centre Portion = rectangle ABGF = bd (24)

$$\begin{aligned} \text{Slope} \quad \Delta S, \text{ ALF} + \text{BGE} &= \Delta S, \text{ ALF} + \text{BGE} \\ &= \frac{1}{2}Sd \times d + \frac{1}{2}S_1d \times d = \frac{1}{2}d^2(S + S_1) \quad \dots \quad (25) \end{aligned}$$

19. Table I.—How Prepared.—Table I for the central portions is obtained by multiplying the top-widths of bank or bottom-widths of cut by the depths. If these products, which are the areas of the centre portions, are multiplied by 100' then cubic contents for lengths of 100 feet are obtained by the Formula $Vc = \text{Volume of the centre portion of 100' length} = 100 \times bd \dots (26)$

Table I gives contents for various depths increasing by .01 feet in cubic feet. By inserting a decimal point two places to the left areas of cross-sections in square feet are obtained.

Ex. 8. Find the area of the central portion of a bank 20' wide, side-slopes 2 to 1, depth of bank 3'. $\therefore bd = 20 \times 3 = 60$ sq. ft. (q.v., Table I, p. 20).

This is obtained at the intersection of the horizontal line corresponding to depth 3' and the vertical line corresponding to central top-width 2' and by inserting a decimal point one place to the left as 2 is one-tenth of 20.

Ex. 9. Find the area of the central portion of a cut 15' wide at base side-slope $1\frac{1}{2}$ to 1 and depth of cut 3.91'. $\therefore bd = 15 \times 3.91 = 58.65$ sq. ft.

This area is obtained at the intersection of the horizontal line corresponding to depth 3.91' and the vertical line corresponding to central top-width of 15' and by inserting a decimal point 2 places to the left (q.v., Table I, p. 25).

PRACTICAL EARTHWORK TABLES. [01-

TABLE I.—Contents of Earthwork in Cubic Feet of Center Point Two Feet

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											I
	2	3	4	5	6	7	8	9	11	12		
0'01	2	3	4	5	6	7	8	9	11	12		
0'02	4	6	8	10	12	14	16	18	22	24		
0'03	6	9	12	15	18	21	24	27	33	36		
0'04	8	12	16	20	24	28	32	36	44	48		
0'05	10	15	20	25	30	36	40	45	55	60		
0'06	12	18	24	30	36	42	48	54	66	72		
0'07	14	21	28	35	42	49	56	63	77	84		
0'08	16	24	32	40	48	56	64	72	88	96		
0'09	18	27	36	45	54	63	72	81	99	108		
0'10	20	30	40	50	60	70	80	90	110	120		
0'11	22	33	44	55	66	77	88	99	121	132		
0'12	24	36	48	60	72	84	96	108	132	144		
0'13	26	39	52	65	78	91	104	117	143	156		
0'14	28	42	56	70	84	98	112	126	154	168		
0'15	30	45	60	75	90	105	120	135	165	180		
0'16	32	48	64	80	96	112	128	144	176	192		
0'17	34	51	68	85	102	119	136	153	187	204		
0'18	36	54	72	90	108	126	144	162	198	216		
0'19	38	57	76	95	114	133	152	171	209	228		
0'20	40	60	80	100	120	140	160	180	220	240		
0'21	42	63	84	105	126	147	168	189	231	252		
0'22	44	66	88	110	132	154	176	198	242	264		
0'23	46	69	92	115	138	161	184	207	253	276		
0'24	48	72	96	120	144	168	192	216	264	288		
0'25	50	75	100	125	150	175	200	225	275	300		
0'26	52	78	104	130	156	182	208	234	286	312		
0'27	54	81	108	135	162	189	216	243	297	324		
0'28	56	84	112	140	168	196	224	252	308	336		
0'29	58	87	116	145	174	203	232	261	319	348		
0'30	60	90	120	150	180	210	240	270	330	360		
0'31	62	93	124	155	186	217	248	279	341	372		
0'32	64	96	128	160	192	224	256	288	352	384		
0'33	66	99	132	165	198	231	264	297	363	396		
0'34	68	102	136	170	204	238	272	306	374	408		
0'35	70	105	140	175	210	245	280	315	385	420		
0'36	72	108	144	180	216	252	288	324	396	432		
0'37	74	111	148	185	222	259	296	333	407	444		
0'38	76	114	152	190	228	266	304	342	418	456		
0'39	78	117	156	195	234	273	312	351	429	468		
0'40	80	120	160	200	240	280	320	360	440	480		
1'1	82	123	164	205	246	287	328	369	451	492		
1'2	84	126	168	210	252	294	336	378	462	504		
1'3	86	129	172	215	258	301	344	387	473	516		
1'4	88	132	176	220	264	308	352	396	484	528		
1'5	90	135	180	225	270	315	360	405	495	540		
1'6	92	138	184	230	276	322	368	414	506	552		
1'7	94	141	188	235	282	329	376	423	517	564		
1'8	96	144	192	240	288	336	384	432	528	576		
1'9	98	147	196	245	294	343	392	441	539	588		
2'0	100	150	200	250	300	350	400	450	550	600		

portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet
14	15	16	17	18	19	22	24	26	28	32	0'01
28	30	32	34	36	38	44	48	52	56	64	0'02
42	45	48	51	54	57	66	72	78	84	96	0'03
56	60	64	68	72	76	88	96	104	112	128	0'04
70	75	80	85	90	95	110	120	130	140	160	0'05
84	90	96	102	108	114	132	144	156	168	192	0'06
98	105	112	119	126	133	154	168	182	196	224	0'07
112	120	128	136	144	152	176	192	208	224	256	0'08
126	135	144	153	162	171	198	216	234	252	288	0'09
140	150	160	170	180	190	220	240	260	280	320	0'10
154	165	176	187	198	209	242	264	286	308	352	0'11
168	180	192	204	216	228	264	288	312	336	384	0'12
182	195	208	221	234	247	288	312	336	360	416	0'13
196	210	224	238	252	266	308	336	364	392	448	0'14
210	225	240	255	270	285	330	360	390	420	480	0'15
224	240	256	272	288	304	362	384	416	448	512	0'16
238	255	272	289	306	323	374	408	442	476	544	0'17
252	270	288	306	324	342	396	432	468	504	576	0'18
266	285	304	323	342	361	418	456	494	532	608	0'19
280	300	320	340	360	380	440	480	520	560	640	0'20
294	315	336	357	378	399	462	504	546	588	672	0'21
308	330	352	374	396	418	484	528	572	616	704	0'22
322	345	368	391	414	437	508	552	596	644	736	0'23
336	360	384	408	432	456	528	576	624	672	768	0'24
350	375	400	425	450	475	550	600	650	700	800	0'25
364	390	416	442	468	494	572	624	678	732	832	0'26
378	405	432	459	486	513	594	648	702	756	864	0'27
392	420	448	476	504	532	616	672	728	784	896	0'28
406	435	464	493	522	551	638	696	754	812	928	0'29
420	450	480	510	540	570	660	720	780	840	960	0'30
434	465	496	527	558	589	682	744	806	868	992	0'31
448	480	512	544	576	608	704	768	832	896	1024	0'32
462	495	528	561	594	627	726	792	858	924	1056	0'33
476	510	544	578	612	646	748	816	884	952	1088	0'34
490	525	560	595	630	665	770	840	910	980	1120	0'35
504	540	576	612	648	684	792	864	936	1008	1152	0'36
518	555	592	629	666	703	814	888	962	1036	1184	0'37
532	570	608	646	684	722	836	912	988	1064	1216	0'38
546	585	624	663	702	741	858	936	1014	1092	1248	0'39
560	600	640	680	720	760	880	960	1040	1120	1280	0'40
574	615	656	697	738	779	902	984	1066	1148	1312	0'41
588	630	672	714	756	798	924	1008	1092	1176	1344	0'42
602	645	688	731	774	817	946	1032	1118	1204	1376	0'43
616	660	704	748	792	836	968	1056	1144	1232	1408	0'44
630	675	720	765	810	855	990	1080	1170	1260	1440	0'45
644	690	736	782	828	874	1012	1104	1196	1288	1472	0'46
658	705	752	799	846	893	1034	1128	1222	1316	1504	0'47
672	720	768	816	864	912	1056	1152	1248	1344	1536	0'48
686	735	784	833	882	931	1078	1176	1274	1372	1568	0'49
700	750	800	850	900	950	1100	1200	1300	1400	1600	0'50

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Place

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT										
	2	3	4	5	6	7	8	9	11	12	13
0'51	102	153	204	255	306	357	408	459	561	612	663
0'52	104	156	208	260	312	364	416	468	572	624	675
0'53	106	159	212	265	318	371	424	477	583	636	688
0'54	108	162	216	270	324	378	432	486	594	648	701
0'55	110	165	220	275	330	385	440	495	605	660	713
0'56	112	168	224	280	336	392	448	504	616	672	726
0'57	114	171	228	285	342	399	456	513	627	684	737
0'58	116	174	232	290	348	406	464	522	636	696	750
0'59	118	177	236	295	354	413	472	531	649	708	763
0'60	120	180	240	300	360	420	480	540	660	720	780
0'61	122	183	244	305	366	427	488	549	671	732	791
0'62	124	186	248	310	372	434	496	558	682	744	804
0'63	126	189	252	315	378	441	504	567	693	756	816
0'64	128	192	256	320	384	448	512	576	704	768	828
0'65	130	195	260	325	390	455	520	585	715	780	841
0'66	132	198	264	330	396	462	528	594	726	792	854
0'67	134	201	268	335	402	469	536	603	737	804	867
0'68	136	204	272	340	408	476	544	612	748	816	880
0'69	138	207	276	345	414	483	552	621	759	828	893
0'70	140	210	280	350	420	490	560	630	770	840	911
0'71	142	213	284	355	426	497	568	639	781	852	921
0'72	144	216	288	360	432	504	576	648	792	864	934
0'73	146	219	292	365	438	511	584	657	803	876	947
0'74	148	222	296	370	444	518	592	666	814	888	960
0'75	150	225	300	375	450	525	600	675	825	900	973
0'76	152	228	304	380	456	532	608	684	836	912	986
0'77	154	231	308	385	462	539	616	693	847	924	1000
0'78	156	234	312	390	468	546	624	702	858	936	1013
0'79	158	237	316	395	474	553	632	711	869	948	1027
0'80	160	240	320	400	480	560	640	720	880	960	1040
0'81	162	243	324	405	486	567	648	729	891	972	1053
0'82	164	246	328	410	492	574	656	738	902	984	1066
0'83	166	249	332	415	498	581	664	747	913	996	1079
0'84	168	252	336	420	504	588	672	756	924	1008	1091
0'85	170	255	340	425	510	595	680	765	935	1020	1104
0'86	172	258	344	430	516	602	688	774	946	1032	1117
0'87	174	261	348	435	522	609	696	783	957	1044	1130
0'88	176	264	352	440	528	616	704	792	968	1056	1143
0'89	178	267	356	445	534	623	712	801	979	1068	1157
0'90	180	270	360	450	540	630	720	810	990	1080	1170
0'91	182	273	364	455	546	637	728	819	1001	1092	1183
0'92	184	276	368	460	552	644	736	828	1012	1104	1196
0'93	186	279	372	465	558	651	744	837	1023	1116	1209
0'94	188	282	376	470	564	658	752	846	1034	1128	1223
0'95	190	285	380	475	570	665	760	855	1045	1140	1236
0'96	192	288	384	480	576	672	768	864	1056	1152	1249
0'97	194	291	388	485	582	679	776	873	1067	1164	1263
0'98	196	294	392	490	588	686	784	882	1078	1176	1276
0'99	198	297	396	495	594	693	792	891	1089	1188	1290
1'00	200	300	400	500	600	700	800	900	1100	1200	1300

utions of Lengths of 100 Feet. For Areas insert a Decimal
th's Left.

WIDTH OF BASE OF CUTTING IN FEET.

4	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
714	768	816	867	918	969	1122	1224	1326	1428	1632	0'51
738	780	832	884	936	988	1144	1248	1352	1456	1664	0'52
742	795	848	901	954	1007	1166	1272	1378	1484	1696	0'53
756	810	864	918	972	1026	1188	1296	1404	1512	1728	0'54
770	825	880	935	990	1045	1210	1320	1430	1540	1760	0'55
784	840	896	952	1008	1064	1232	1344	1456	1568	1792	0'56
798	855	912	969	1026	1083	1254	1368	1482	1596	1824	0'57
812	870	928	986	1044	1102	1276	1392	1508	1624	1856	0'58
826	885	944	1003	1062	1121	1298	1416	1534	1652	1888	0'59
840	900	960	1020	1080	1140	1320	1440	1560	1680	1920	0'60
854	915	976	1037	1098	1159	1342	1464	1586	1708	1952	0'61
868	930	992	1054	1116	1178	1364	1488	1612	1736	1984	0'62
882	945	1008	1071	1134	1197	1386	1512	1638	1764	2016	0'63
896	960	1024	1088	1152	1216	1408	1536	1664	1792	2048	0'64
910	975	1040	1105	1170	1235	1430	1560	1690	1820	2080	0'65
924	990	1056	1122	1188	1254	1452	1584	1716	1848	2112	0'66
938	1005	1072	1139	1206	1273	1474	1608	1742	1876	2144	0'67
952	1020	1088	1156	1224	1292	1496	1632	1768	1904	2176	0'68
966	1035	1104	1173	1242	1311	1518	1656	1794	1932	2208	0'69
980	1050	1120	1190	1260	1330	1540	1680	1820	1960	2240	0'70
994	1065	1136	1207	1278	1349	1562	1704	1846	1988	2272	0'71
1008	1080	1152	1224	1296	1368	1584	1728	1872	2016	2304	0'72
1022	1095	1168	1241	1314	1387	1606	1752	1898	2044	2336	0'73
1036	1110	1184	1258	1332	1406	1628	1776	1924	2072	2368	0'74
1050	1125	1200	1275	1350	1425	1650	1800	1950	2100	2400	0'75
1064	1140	1216	1292	1368	1444	1672	1824	1976	2128	2432	0'76
1078	1155	1232	1309	1386	1462	1694	1848	2002	2156	2464	0'77
1092	1170	1248	1326	1404	1482	1716	1872	2028	2184	2496	0'78
1106	1185	1264	1343	1422	1501	1738	1896	2054	2212	2528	0'79
1120	1200	1280	1360	1440	1520	1760	1920	2080	2240	2560	0'80
1134	1215	1296	1377	1458	1539	1782	1944	2106	2268	2592	0'81
1148	1230	1312	1394	1476	1558	1804	1968	2132	2296	2624	0'82
1162	1245	1328	1411	1494	1577	1826	1992	2158	2324	2656	0'83
1176	1260	1344	1428	1512	1599	1848	2016	2184	2352	2688	0'84
1190	1275	1360	1445	1530	1618	1870	2040	2210	2380	2720	0'85
1204	1290	1376	1463	1548	1634	1892	2064	2236	2408	2752	0'86
1218	1305	1392	1479	1565	1658	1914	2088	2262	2436	2784	0'87
1232	1320	1408	1496	1584	1677	1936	2112	2289	2464	2816	0'88
1246	1335	1424	1513	1602	1691	1958	2136	2314	2492	2848	0'89
1260	1350	1440	1530	1620	1710	1980	2160	2340	2520	2880	0'90
1274	1365	1456	1547	1638	1729	2002	2184	2366	2548	2912	0'91
1288	1380	1472	1564	1656	1748	2024	2208	2392	2576	2944	0'92
1302	1395	1488	1581	1674	1767	2046	2232	2418	2604	2976	0'93
1316	1410	1504	1598	1692	1786	2068	2256	2444	2632	3008	0'94
1330	1425	1520	1615	1710	1805	2090	2280	2470	2660	3040	0'95
1344	1440	1536	1632	1728	1824	2112	2304	2496	2688	3072	0'96
1358	1455	1552	1649	1746	1842	2134	2328	2522	2716	3104	0'97
1372	1470	1568	1666	1764	1863	2156	2352	2548	2744	3136	0'98
1386	1485	1584	1683	1782	1882	2178	2376	2574	2772	3168	0'99
1400	1500	1600	1700	1800	1900	2200	2400	2600	2800	3200	1'00

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
1'01	202	803	404	605	606	707	808	909	1111	1212	1313	
1'02	204	806	408	510	612	714	816	918	1122	1224	1326	
1'03	206	809	412	515	618	721	824	927	1133	1236	1339	
1'04	208	812	416	520	624	728	832	936	1144	1248	1352	
1'05	210	815	420	525	630	735	840	945	1155	1260	1365	
1'06	212	818	424	530	636	742	848	954	1166	1272	1378	
1'07	214	821	428	535	642	749	856	963	1177	1284	1391	
1'08	216	824	432	540	648	756	864	972	1188	1296	1404	
1'09	218	827	436	545	654	763	872	981	1199	1308	1417	
1'10	220	830	440	550	660	770	880	990	1210	1320	1430	
1'11	222	833	444	555	666	777	888	999	1221	1332	1443	
1'12	224	836	448	560	672	784	896	1008	1232	1344	1456	
1'13	226	839	452	565	678	791	904	1017	1243	1356	1469	
1'14	228	842	456	570	684	798	912	1026	1254	1368	1482	
1'15	230	845	460	575	690	805	920	1035	1265	1380	1495	
1'16	232	848	464	580	696	812	928	1044	1276	1392	1508	
1'17	234	851	468	585	702	819	936	1053	1287	1404	1521	
1'18	236	854	472	590	708	826	944	1062	1298	1416	1534	
1'19	238	857	476	595	714	833	952	1071	1309	1428	1547	
1'20	240	860	480	600	720	840	960	1080	1320	1440	1560	
1'21	242	863	484	605	726	847	968	1089	1331	1452	1573	
1'22	244	866	488	610	732	854	976	1098	1342	1464	1586	
1'23	246	869	492	615	738	861	984	1107	1353	1476	1599	
1'24	248	872	496	620	744	868	992	1116	1364	1488	1612	
1'25	250	875	500	625	750	875	1000	1125	1375	1500	1625	
1'26	252	878	504	630	756	882	1008	1134	1386	1512	1638	
1'27	254	881	508	635	762	889	1016	1143	1397	1524	1651	
1'28	256	884	512	640	768	896	1024	1152	1408	1536	1664	
1'29	258	887	516	645	774	903	1032	1161	1419	1548	1677	
1'30	260	890	520	650	780	910	1040	1170	1430	1560	1690	
1'31	262	893	524	655	786	917	1048	1179	1441	1572	1703	
1'32	264	896	528	660	792	924	1056	1188	1452	1584	1716	
1'33	266	899	532	665	798	931	1064	1197	1463	1596	1729	
1'34	268	902	536	670	804	938	1072	1206	1474	1608	1743	
1'35	270	905	540	675	810	945	1080	1216	1485	1620	1756	
1'36	272	908	544	680	816	952	1088	1224	1496	1632	1768	
1'37	274	911	548	685	822	959	1096	1233	1507	1644	1781	
1'38	276	914	552	690	828	966	1104	1242	1518	1656	1794	
1'39	278	917	556	695	834	973	1112	1251	1529	1668	1807	
1'40	280	920	560	700	840	980	1120	1260	1540	1680	1820	
1'41	282	923	564	705	846	987	1128	1269	1551	1692	1833	
1'42	284	926	568	710	852	994	1136	1278	1562	1704	1846	
1'43	286	929	572	715	858	1001	1144	1287	1573	1716	1859	
1'44	288	932	576	720	864	1008	1152	1296	1584	1728	1872	
1'45	290	935	580	725	870	1015	1160	1305	1595	1740	1885	
1'46	292	938	584	730	876	1022	1168	1314	1606	1752	1898	
1'47	294	941	588	735	882	1029	1176	1323	1617	1764	1911	
1'48	296	944	592	740	888	1036	1184	1333	1628	1776	1924	
1'49	298	947	596	745	894	1043	1192	1341	1639	1788	1937	
1'50	300	950	600	750	900	1050	1200	1350	1650	1800	1950	

Portions of Lengths of 100 Feet. For Areas Insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.											Depth in Feet.
14	15	16	17	18	19	22	24	26	28	32	
1414	1515	1616	1717	1818	1919	2222	2424	2626	2828	3232	1'01
1428	1530	1632	1734	1836	1938	2244	2448	2652	2856	3264	1'02
1442	1545	1648	1751	1854	1957	2266	2472	2678	2884	3296	1'03
1456	1560	1664	1768	1872	1976	2288	2496	2704	2912	3328	1'04
1470	1575	1680	1785	1890	1995	2310	2520	2730	2940	3360	1'05
1484	1590	1696	1802	1908	2014	2332	2544	2756	2968	3392	1'06
1498	1605	1712	1819	1926	2033	2354	2568	2782	2996	3424	1'07
1512	1620	1728	1836	1944	2052	2376	2592	2808	3024	3456	1'08
1526	1635	1744	1853	1962	2071	2398	2616	2834	3052	3488	1'09
1540	1650	1760	1870	1980	2090	2420	2640	2860	3080	3520	1'10
1554	1665	1776	1887	1998	2109	2442	2664	2886	3108	3552	1'11
1568	1680	1792	1904	2016	2128	2464	2688	2912	3136	3584	1'12
1582	1695	1808	1921	2034	2147	2486	2712	2938	3164	3616	1'13
1596	1710	1824	1938	2052	2166	2508	2736	2964	3192	3648	1'14
1610	1725	1840	1955	2070	2185	2530	2760	2990	3220	3680	1'15
1624	1740	1856	1972	2088	2204	2552	2784	3016	3248	3712	1'16
1638	1755	1872	1989	2106	2226	2574	2808	3042	3276	3744	1'17
1652	1770	1888	2006	2124	2242	2596	2832	3068	3304	3776	1'18
1666	1785	1904	2023	2142	2261	2618	2856	3094	3332	3808	1'19
1680	1800	1920	2040	2160	2280	2640	2880	3120	3360	3840	1'20
1694	1815	1936	2057	2178	2299	2662	2904	3146	3388	3872	1'21
1708	1830	1952	2074	2196	2318	2684	2928	3172	3416	3904	1'22
1722	1845	1968	2091	2214	2337	2706	2952	3198	3444	3936	1'23
1736	1860	1984	2108	2232	2358	2728	2976	3224	3472	3968	1'24
1750	1875	2000	2126	2250	2375	2750	3000	3250	3500	4000	1'25
1764	1890	2016	2144	2268	2394	2772	3024	3276	3528	4032	1'26
1778	1905	2032	2159	2286	2415	2794	3048	3302	3556	4064	1'27
1792	1920	2048	2176	2304	2432	2816	3072	3328	3584	4096	1'28
1806	1935	2064	2193	2322	2451	2838	3096	3354	3612	4128	1'29
1820	1950	2080	2210	2340	2470	2860	3120	3380	3640	4160	1'30
1834	1965	2096	2227	2358	2489	2882	3144	3406	3668	4192	1'31
1848	1980	2112	2244	2376	2508	2904	3168	3432	3696	4224	1'32
1862	1995	2138	2261	2394	2527	2926	3192	3458	3724	4256	1'33
1876	2010	2154	2278	2412	2546	2948	3216	3484	3752	4288	1'34
1890	2025	2169	2295	2430	2565	2970	3240	3510	3780	4320	1'35
1904	2040	2184	2312	2448	2584	2992	3264	3536	3808	4352	1'36
1918	2055	2192	2329	2466	2603	3014	3288	3562	3836	4384	1'37
1932	2070	2208	2346	2484	2622	3036	3312	3588	3864	4416	1'38
1946	2085	2224	2363	2502	2641	3058	3336	3614	3892	4448	1'39
1960	2100	2240	2380	2520	2660	3080	3360	3640	3920	4480	1'40
1974	2115	2256	2397	2538	2679	3102	3384	3666	3948	4512	1'41
1988	2130	2272	2414	2556	2698	3124	3408	3692	3976	4544	1'42
2002	2145	2288	2431	2574	2717	3146	3432	3718	4004	4576	1'43
2016	2160	2304	2448	2592	2736	3168	3456	3744	4032	4608	1'44
2030	2175	2320	2465	2610	2755	3190	3480	3770	4060	4640	1'45
2044	2190	2336	2482	2628	2774	3212	3504	3796	4088	4672	1'46
2058	2205	2352	2499	2646	2793	3234	3528	3822	4116	4704	1'47
2072	2220	2368	2516	2664	2812	3256	3552	3848	4144	4736	1'48
2086	2235	2384	2533	2682	2831	3278	3576	3874	4172	4768	1'49
2100	2250	2400	2550	2700	2850	3300	3600	3900	4200	4800	1'50

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
1'51	302	483	604	755	906	1057	1208	1359	1661	1812	1963	
1'52	304	486	608	760	912	1064	1216	1368	1672	1824	1976	
1'53	306	489	612	765	918	1071	1224	1377	1683	1836	1989	
1'54	308	492	616	770	924	1078	1232	1386	1694	1848	2002	
1'55	310	495	620	775	930	1085	1240	1395	1705	1860	2015	
1'56	312	498	624	780	936	1092	1248	1404	1716	1872	2028	
1'57	314	471	628	785	942	1099	1256	1413	1727	1884	2041	
1'58	316	474	632	790	948	1106	1264	1422	1738	1896	2054	
1'59	318	477	636	795	954	1113	1272	1431	1749	1908	2067	
1'60	320	480	640	800	960	1120	1280	1440	1760	1920	2080	
1'61	322	483	644	805	966	1127	1288	1449	1771	1932	2093	
1'62	324	486	648	810	972	1134	1296	1458	1782	1944	2106	
1'63	326	489	652	815	978	1141	1304	1467	1793	1956	2119	
1'64	328	492	656	820	984	1148	1312	1476	1804	1968	2132	
1'65	330	495	660	825	990	1155	1320	1485	1815	1980	2145	
1'66	332	498	664	830	996	1162	1328	1494	1826	1992	2158	
1'67	334	501	668	835	1002	1169	1336	1503	1837	2004	2171	
1'68	336	504	672	840	1008	1176	1344	1512	1848	2016	2184	
1'69	338	507	676	845	1014	1183	1352	1521	1859	2028	2197	
1'70	340	510	680	850	1020	1190	1360	1530	1870	2040	2210	
1'71	342	513	684	855	1026	1197	1368	1539	1881	2052	2223	
1'72	344	516	688	860	1032	1204	1376	1548	1892	2064	2236	
1'73	346	519	692	865	1038	1211	1384	1557	1903	2076	2249	
1'74	348	522	696	870	1044	1218	1392	1566	1914	2088	2262	
1'75	350	525	700	875	1050	1225	1400	1575	1925	2100	2275	
1'76	352	528	704	880	1056	1232	1408	1584	1936	2112	2288	
1'77	354	531	708	885	1062	1239	1416	1593	1947	2124	2301	
1'78	356	534	712	890	1068	1246	1424	1602	1958	2136	2314	
1'79	358	537	716	895	1074	1253	1432	1611	1969	2148	2327	
1'80	360	540	720	900	1080	1260	1440	1620	1980	2160	2340	
1'81	362	543	724	905	1086	1267	1448	1629	1991	2172	2353	
1'82	364	546	728	910	1092	1274	1456	1638	2002	2184	2366	
1'83	366	549	732	915	1098	1281	1464	1647	2013	2196	2379	
1'84	368	553	736	920	1104	1288	1472	1656	2024	2208	2392	
1'85	370	556	740	925	1110	1295	1480	1665	2035	2220	2405	
1'86	372	558	744	930	1116	1302	1488	1674	2046	2232	2418	
1'87	374	561	748	935	1122	1309	1496	1683	2057	2244	2431	
1'88	376	564	752	940	1128	1316	1504	1692	2068	2256	2444	
1'89	378	567	756	945	1134	1323	1512	1701	2079	2268	2457	
1'90	380	570	760	950	1140	1330	1520	1710	2090	2280	2470	
1'91	382	573	764	955	1146	1337	1528	1719	2101	2292	2483	
1'92	384	576	768	960	1152	1344	1536	1728	2112	2304	2496	
1'93	386	579	772	965	1158	1351	1544	1737	2123	2316	2509	
1'94	388	582	776	970	1164	1358	1552	1746	2134	2328	2522	
1'95	390	585	780	975	1170	1365	1560	1755	2145	2340	2535	
1'96	392	588	784	980	1176	1372	1568	1764	2156	2352	2548	
1'97	394	591	788	985	1182	1379	1576	1773	2167	2364	2561	
1'98	396	594	792	990	1188	1386	1584	1782	2178	2376	2574	
1'99	398	597	796	995	1194	1393	1592	1791	2189	2388	2587	
2'00	400	600	800	1000	1200	1400	1600	1800	2200	2400	2600	

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

ON WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
2114	2265	2416	2567	2718	2869	3022	3174	3326	3478	3630	1'51
2128	2280	2432	2584	2736	2888	3041	3194	3347	3500	3653	1'52
2142	2295	2448	2601	2754	2907	3061	3215	3369	3524	3679	1'53
2156	2310	2464	2618	2772	2926	3081	3236	3392	3548	3705	1'54
2170	2325	2480	2635	2790	2945	3101	3257	3414	3572	3731	1'55
2184	2340	2496	2652	2808	2964	3121	3278	3437	3596	3752	1'56
2198	2355	2512	2669	2826	2983	3141	3298	3458	3618	3774	1'57
2212	2370	2528	2686	2844	3002	3161	3317	3479	3641	3797	1'58
2226	2385	2544	2703	2862	3021	3181	3337	3499	3663	3819	1'59
2240	2400	2560	2720	2880	3040	3200	3357	3520	3686	3842	1'60
2254	2415	2576	2737	2898	3059	3219	3376	3539	3705	3865	1'61
2268	2430	2592	2754	2916	3078	3238	3396	3559	3726	3887	1'62
2282	2445	2608	2771	2934	3097	3258	3417	3579	3748	3910	1'63
2296	2460	2624	2788	2952	3116	3278	3438	3600	3770	3933	1'64
2310	2475	2640	2805	2970	3135	3299	3459	3622	3793	3956	1'65
2324	2490	2656	2822	2988	3154	3319	3480	3644	3816	3979	1'66
2338	2505	2672	2839	3006	3173	3339	3501	3666	3838	4002	1'67
2352	2520	2688	2856	3024	3192	3359	3522	3688	3860	4025	1'68
2366	2535	2704	2873	3042	3211	3378	3543	3710	3883	4048	1'69
2380	2550	2720	2890	3060	3230	3399	3564	3732	3906	4071	1'70
2394	2565	2736	2907	3078	3249	3419	3585	3754	3929	4094	1'71
2408	2580	2752	2924	3096	3268	3438	3606	3776	3952	4117	1'72
2422	2595	2768	2941	3114	3287	3458	3627	3798	3975	4140	1'73
2436	2610	2784	2958	3132	3306	3478	3648	3820	3998	4163	1'74
2450	2625	2800	2975	3150	3325	3499	3669	3842	4021	4186	1'75
2464	2640	2816	2992	3168	3344	3519	3690	3864	4044	4209	1'76
2478	2655	2832	3009	3186	3363	3539	3711	3886	4067	4232	1'77
2492	2670	2848	3026	3204	3382	3559	3732	3908	4090	4255	1'78
2506	2685	2864	3043	3222	3401	3578	3754	3931	4113	4278	1'79
2520	2700	2880	3060	3240	3420	3599	3775	3954	4136	4301	1'80
2534	2715	2896	3077	3258	3439	3619	3796	3976	4159	4324	1'81
2548	2730	2912	3094	3276	3458	3638	3817	3999	4182	4347	1'82
2562	2745	2928	3111	3294	3477	3658	3838	4021	4205	4370	1'83
2576	2760	2944	3128	3312	3496	3678	3859	4044	4228	4393	1'84
2590	2775	2960	3145	3330	3515	3699	3880	4067	4251	4416	1'85
2604	2790	2976	3162	3348	3534	3719	3901	4089	4274	4439	1'86
2618	2805	2992	3179	3366	3553	3739	3922	4112	4297	4462	1'87
2632	2820	3008	3196	3384	3572	3759	3943	4135	4320	4485	1'88
2646	2835	3024	3213	3402	3591	3778	3964	4158	4343	4508	1'89
2660	2850	3040	3230	3420	3610	3799	3985	4181	4366	4531	1'90
2674	2865	3056	3247	3438	3629	3819	4006	4204	4389	4554	1'91
2688	2880	3072	3264	3456	3648	3838	4027	4227	4412	4577	1'92
2702	2895	3088	3281	3474	3667	3858	4048	4250	4435	4600	1'93
2716	2910	3104	3298	3492	3686	3878	4069	4273	4458	4623	1'94
2730	2925	3120	3315	3510	3705	3899	4090	4296	4481	4646	1'95
2744	2940	3136	3332	3528	3724	3919	4111	4319	4504	4669	1'96
2758	2955	3152	3349	3546	3743	3939	4132	4342	4527	4692	1'97
2772	2970	3168	3366	3564	3762	3958	4153	4365	4550	4715	1'98
2786	2985	3184	3383	3582	3781	3978	4174	4388	4573	4738	1'99
2800	3000	3200	3400	3600	3800	4000	4200	4400	4600	4800	2'00

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT										
	2	3	4	5	6	7	8	9	11	12	13
2'01	402	603	804	1005	1206	1407	1608	1809	2211	2412	2613
2'02	404	606	808	1010	1212	1414	1616	1818	2222	2424	2616
2'03	406	609	812	1015	1218	1421	1624	1827	2233	2436	2639
2'04	408	612	816	1020	1224	1428	1632	1836	2244	2448	2652
2'05	410	615	820	1025	1230	1435	1640	1845	2255	2460	2665
2'06	412	618	824	1030	1236	1442	1648	1854	2266	2472	2678
2'07	414	621	828	1035	1242	1449	1656	1863	2277	2484	2691
2'08	416	624	832	1040	1248	1456	1664	1872	2288	2496	2704
2'09	418	627	836	1045	1254	1463	1672	1881	2299	2508	2717
2'10	420	630	840	1050	1260	1470	1680	1890	2310	2520	2730
2'11	422	633	844	1055	1266	1477	1688	1899	2321	2532	2743
2'12	424	636	848	1060	1272	1484	1696	1908	2332	2544	2756
2'13	426	639	852	1065	1278	1491	1704	1917	2343	2556	2769
2'14	428	642	856	1070	1284	1498	1712	1926	2354	2568	2782
2'15	430	645	860	1075	1290	1505	1720	1935	2365	2580	2795
2'16	432	648	864	1080	1296	1512	1728	1944	2376	2592	2808
2'17	434	651	868	1085	1302	1519	1736	1953	2387	2604	2821
2'18	436	654	872	1090	1308	1526	1744	1962	2398	2616	2834
2'19	438	657	876	1095	1314	1533	1752	1971	2409	2628	2847
2'20	440	660	880	1100	1320	1540	1760	1980	2420	2640	2860
2'21	442	663	884	1105	1326	1547	1768	1989	2431	2652	2873
2'22	444	666	888	1110	1332	1554	1776	1998	2442	2664	2886
2'23	446	669	892	1115	1338	1561	1784	2007	2453	2676	2899
2'24	448	672	896	1120	1344	1568	1792	2016	2464	2688	2912
2'25	450	675	900	1125	1350	1575	1800	2025	2475	2700	2925
2'26	452	678	904	1130	1356	1582	1808	2034	2486	2712	2938
2'27	454	681	908	1135	1362	1589	1816	2043	2497	2724	2951
2'28	456	684	912	1140	1368	1596	1824	2052	2508	2736	2964
2'29	458	687	916	1145	1374	1603	1832	2061	2519	2748	2977
2'30	460	690	920	1150	1380	1610	1840	2070	2530	2760	2990
2'31	462	693	924	1155	1386	1617	1848	2079	2541	2772	3003
2'32	464	696	928	1160	1392	1624	1856	2088	2552	2784	3016
2'33	466	699	932	1165	1398	1631	1864	2097	2563	2796	3029
2'34	468	702	936	1170	1404	1638	1872	2106	2574	2808	3042
2'35	470	705	940	1175	1410	1645	1880	2115	2585	2820	3055
2'36	472	708	944	1180	1416	1652	1888	2124	2596	2832	3068
2'37	474	711	948	1185	1422	1659	1896	2133	2607	2844	3081
2'38	476	714	952	1190	1428	1666	1904	2142	2618	2856	3094
2'39	478	717	956	1195	1434	1673	1912	2151	2629	2868	3107
2'40	480	720	960	1200	1440	1680	1920	2160	2640	2880	3120
2'41	482	723	964	1205	1446	1687	1928	2169	2651	2892	3133
2'42	484	726	968	1210	1452	1694	1936	2178	2662	2904	3146
2'43	486	729	972	1215	1458	1701	1944	2187	2673	2916	3159
2'44	488	732	976	1220	1464	1708	1952	2196	2684	2928	3172
2'45	490	735	980	1225	1470	1715	1960	2205	2695	2940	3185
2'46	492	738	984	1230	1476	1722	1968	2214	2706	2952	3198
2'47	494	741	988	1235	1482	1729	1976	2223	2717	2964	3211
2'48	496	744	992	1240	1488	1736	1984	2232	2728	2976	3224
2'49	498	747	996	1245	1494	1743	1992	2241	2739	2988	3237
2'50	500	750	1000	1250	1500	1750	2000	2250	2750	3000	3250

2:01-2:50]

CENTRAL PORTIONS.

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Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
2814	8015	3216	3417	3618	3819	4122	4324	4526	4728	4932	2'01
2828	8030	3232	3434	3636	3838	4144	4346	4548	4750	4954	2'02
2842	8045	3248	3451	3654	3857	4166	4368	4570	4772	4976	2'03
2856	3060	3264	3468	3672	3876	4188	4390	4592	4794	4998	2'04
2870	3075	3280	3485	3690	3895	4201	4402	4604	4806	5008	2'05
2884	3090	3296	3502	3708	3914	4221	4422	4624	4826	5028	2'06
2898	3105	3312	3519	3726	3933	4241	4442	4644	4846	5048	2'07
2912	3120	3328	3536	3744	3952	4256	4458	4660	4862	5064	2'08
2926	3135	3344	3558	3762	3971	4268	4470	4672	4874	5076	2'09
2940	3150	3360	3570	3780	3990	4280	4482	4684	4886	5088	2'10
2954	3165	3376	3587	3798	4009	4292	4494	4696	4898	5100	2'11
2968	3180	3392	3604	3816	4028	4304	4506	4708	4910	5112	2'12
2982	3195	3408	3621	3834	4047	4316	4518	4720	4922	5124	2'13
2996	3210	3424	3638	3852	4066	4328	4530	4732	4934	5136	2'14
3010	3225	3440	3655	3870	4085	4340	4542	4744	4946	5148	2'15
3024	3240	3456	3672	3888	4104	4352	4554	4756	4958	5160	2'16
3038	3255	3472	3689	3906	4123	4364	4566	4768	4970	5172	2'17
3052	3270	3488	3706	3924	4142	4376	4578	4780	4982	5184	2'18
3066	3285	3504	3723	3942	4161	4388	4590	4792	4994	5200	2'19
3080	3300	3520	3740	3960	4180	4400	4602	4804	5006	5212	2'20
3094	3315	3536	3757	3978	4199	4412	4614	4816	5018	5224	2'21
3108	3330	3552	3774	3996	4218	4424	4626	4828	5030	5236	2'22
3122	3345	3568	3791	4014	4237	4436	4638	4840	5042	5248	2'23
3136	3360	3584	3808	4032	4256	4448	4650	4852	5054	5260	2'24
3150	3375	3600	3825	4050	4275	4460	4662	4864	5066	5272	2'25
3164	3390	3616	3842	4068	4294	4472	4674	4876	5078	5284	2'26
3178	3405	3632	3859	4086	4313	4484	4686	4888	5090	5296	2'27
3192	3420	3648	3876	4104	4332	4496	4698	4900	5102	5308	2'28
3206	3435	3664	3893	4122	4351	4508	4710	4912	5114	5320	2'29
3220	3450	3680	3910	4140	4370	4520	4722	4924	5126	5332	2'30
3234	3465	3696	3927	4158	4389	4532	4734	4936	5138	5344	2'31
3248	3480	3712	3944	4176	4408	4544	4746	4948	5150	5356	2'32
3262	3495	3728	3961	4194	4427	4562	4764	4966	5168	5368	2'33
3276	3510	3744	3978	4212	4446	4580	4782	4984	5186	5380	2'34
3290	3525	3760	3995	4230	4465	4598	4800	5002	5204	5396	2'35
3304	3540	3776	4012	4248	4484	4616	4818	5020	5222	5408	2'36
3318	3555	3792	4029	4266	4503	4634	4836	5038	5240	5420	2'37
3332	3570	3808	4046	4284	4522	4652	4854	5056	5258	5432	2'38
3346	3585	3824	4063	4302	4541	4670	4872	5074	5276	5444	2'39
3360	3600	3840	4080	4320	4560	4688	4890	5092	5294	5456	2'40
3374	3615	3856	4097	4338	4579	4702	4904	5106	5308	5468	2'41
3388	3630	3872	4114	4356	4598	4720	4922	5124	5326	5480	2'42
3402	3645	3888	4131	4374	4617	4738	4940	5142	5344	5492	2'43
3416	3660	3904	4148	4392	4636	4756	4958	5160	5356	5504	2'44
3430	3675	3920	4165	4410	4655	4774	4976	5178	5370	5516	2'45
3444	3690	3936	4182	4428	4674	4792	4994	5196	5382	5528	2'46
3458	3705	3952	4199	4446	4693	4810	5012	5214	5404	5540	2'47
3472	3720	3968	4216	4464	4712	4828	5030	5232	5426	5552	2'48
3486	3735	3984	4233	4482	4731	4846	5048	5250	5438	5564	2'49
3500	3750	4000	4250	4500	4750	4860	5062	5264	5450	5576	2'50

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Faces

Depth, in feet.	CENTRAL TOP WIDTH OF EMBANKMENT										
	2	3	4	5	6	7	8	9	11	12	13
2.51	502	753	1004	1255	1506	1757	2008	2259	2761	3012	3263
2.52	504	756	1008	1260	1512	1764	2016	2268	2772	3024	3276
2.53	506	759	1012	1265	1518	1771	2024	2277	2785	3036	3289
2.54	508	762	1016	1270	1524	1778	2032	2286	2794	3048	3302
2.55	510	765	1020	1275	1530	1785	2040	2295	2805	3060	3315
2.56	512	768	1024	1280	1536	1792	2048	2304	2816	3072	3328
2.57	514	771	1028	1285	1542	1799	2056	2313	2827	3084	3341
2.58	516	774	1032	1290	1548	1806	2064	2322	2838	3096	3354
2.59	518	777	1036	1295	1554	1813	2072	2331	2849	3108	3367
2.60	520	780	1040	1300	1560	1820	2080	2340	2860	3120	3380
2.61	522	783	1044	1305	1566	1827	2088	2349	2871	3132	3393
2.62	524	786	1048	1310	1572	1834	2096	2358	2882	3144	3406
2.63	526	789	1052	1315	1578	1841	2104	2367	2893	3156	3419
2.64	528	792	1056	1320	1584	1848	2112	2376	2904	3168	3432
2.65	530	795	1060	1325	1590	1855	2120	2385	2915	3180	3445
2.66	532	798	1064	1330	1596	1862	2128	2394	2926	3192	3458
2.67	534	801	1068	1335	1602	1869	2136	2403	2937	3204	3471
2.68	536	804	1072	1340	1608	1876	2144	2412	2948	3216	3484
2.69	538	807	1076	1345	1614	1883	2152	2421	2959	3228	3497
2.70	540	810	1080	1350	1620	1890	2160	2430	2970	3240	3510
2.71	542	813	1084	1355	1626	1897	2168	2439	2981	3252	3523
2.72	544	816	1088	1360	1632	1904	2176	2448	2992	3264	3536
2.73	546	819	1092	1365	1638	1911	2184	2457	3003	3276	3549
2.74	548	822	1096	1370	1644	1918	2192	2466	3014	3288	3562
2.75	550	825	1100	1375	1650	1925	2200	2475	3025	3300	3575
2.76	552	828	1104	1380	1656	1932	2208	2484	3036	3312	3588
2.77	554	831	1108	1385	1662	1939	2216	2493	3047	3324	3601
2.78	556	834	1112	1390	1668	1946	2224	2502	3058	3336	3614
2.79	558	837	1116	1395	1674	1953	2232	2511	3069	3348	3627
2.80	560	840	1120	1400	1680	1960	2240	2520	3080	3360	3640
2.81	562	843	1124	1405	1686	1967	2248	2529	3091	3372	3653
2.82	564	846	1128	1410	1692	1974	2256	2538	3102	3384	3666
2.83	566	849	1132	1415	1698	1981	2264	2547	3113	3396	3679
2.84	568	852	1136	1420	1704	1988	2272	2556	3124	3408	3692
2.85	570	855	1140	1425	1710	1995	2280	2565	3135	3420	3705
2.86	572	858	1144	1430	1716	2002	2288	2574	3146	3432	3718
2.87	574	861	1148	1435	1722	2009	2296	2583	3157	3444	3731
2.88	576	864	1152	1440	1728	2016	2304	2592	3168	3456	3744
2.89	578	867	1156	1445	1734	2023	2312	2601	3179	3468	3757
2.90	580	870	1160	1450	1740	2030	2320	2610	3190	3480	3770
2.91	582	873	1164	1455	1746	2037	2328	2619	3201	3492	3783
2.92	584	876	1168	1460	1752	2044	2336	2628	3212	3504	3796
2.93	586	879	1172	1465	1758	2051	2344	2637	3223	3516	3809
2.94	588	882	1176	1470	1764	2058	2352	2646	3234	3528	3822
2.95	590	885	1180	1475	1770	2065	2360	2655	3245	3540	3835
2.96	592	888	1184	1480	1776	2072	2368	2664	3256	3552	3848
2.97	594	891	1188	1485	1782	2079	2376	2673	3267	3564	3861
2.98	596	894	1192	1490	1788	2086	2384	2682	3278	3576	3874
2.99	598	897	1196	1495	1794	2093	2392	2691	3289	3588	3887
3.00	600	900	1200	1500	1800	2100	2400	2700	3300	3600	3900

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.											Depth in Feet.
14	15	16	17	18	19	22	24	26	28	32	
3514	3765	4016	4267	4518	4769	5522	6024	6526	7028	8032	2'51
3526	3780	4032	4284	4536	4788	5544	6048	6552	7056	8064	2'52
3542	3795	4048	4301	4554	4807	5566	6072	6578	7084	8096	2'53
3556	3810	4064	4318	4572	4826	5588	6096	6604	7112	8128	2'54
3570	3825	4080	4335	4590	4845	5610	6120	6630	7140	8160	2'55
3584	3840	4096	4352	4608	4864	5632	6144	6658	7168	8192	2'56
3598	3855	4112	4369	4626	4888	5654	6168	6682	7196	8224	2'57
3612	3870	4128	4386	4644	4902	5676	6192	6708	7224	8256	2'58
3626	3885	4144	4403	4662	4921	5698	6216	6734	7252	8288	2'59
3640	3900	4160	4420	4680	4940	5720	6240	6760	7280	8320	2'60
3654	3915	4176	4437	4698	4959	5742	6264	6786	7308	8352	2'61
3668	3930	4192	4454	4716	4978	5764	6288	6812	7336	8384	2'62
3682	3945	4206	4471	4734	4997	5786	6312	6838	7364	8416	2'63
3696	3960	4224	4488	4752	5016	5808	6336	6864	7392	8448	2'64
3710	3975	4240	4505	4770	5035	5830	6360	6890	7420	8480	2'65
3724	3990	4256	4522	4788	5054	5852	6384	6916	7448	8512	2'66
3738	4005	4272	4539	4806	5073	5874	6408	6942	7476	8544	2'67
3752	4020	4288	4556	4824	5092	5896	6432	6968	7504	8576	2'68
3766	4035	4304	4573	4842	5111	5918	6456	6994	7532	8608	2'69
3780	4050	4320	4590	4860	5130	5940	6480	7020	7560	8640	2'70
3794	4065	4336	4607	4878	5149	5962	6504	7046	7588	8672	2'71
3808	4080	4352	4624	4896	5168	5984	6528	7072	7616	8704	2'72
3822	4095	4368	4641	4914	5187	6006	6552	7098	7644	8736	2'73
3836	4110	4384	4658	4932	5206	6028	6576	7124	7672	8768	2'74
3850	4125	4400	4675	4950	5225	6050	6600	7150	7700	8800	2'75
3864	4140	4416	4692	4968	5244	6072	6624	7176	7728	8832	2'76
3878	4155	4432	4709	4986	5263	6094	6648	7202	7756	8864	2'77
3892	4170	4448	4726	5004	5282	6116	6672	7228	7784	8896	2'78
3906	4185	4464	4743	5022	5301	6138	6696	7254	7812	8928	2'79
3920	4200	4480	4760	5040	5320	6160	6730	7280	7840	8960	2'80
3934	4215	4496	4777	5058	5339	6182	6744	7306	7868	8992	2'81
3948	4230	4512	4794	5076	5358	6204	6768	7332	7896	9024	2'82
3962	4245	4528	4811	5094	5377	6226	6792	7358	7924	9056	2'83
3976	4260	4544	4828	5112	5396	6248	6816	7384	7952	9088	2'84
3990	4275	4560	4845	5130	5415	6270	6840	7410	7980	9120	2'85
4004	4290	4576	4862	5148	5434	6292	6864	7436	8008	9152	2'86
4018	4305	4592	4879	5166	5453	6314	6888	7462	8036	9184	2'87
4032	4320	4608	4896	5184	5472	6336	6912	7488	8064	9216	2'88
4046	4335	4624	4913	5202	5491	6358	6936	7514	8092	9248	2'89
4060	4350	4640	4930	5220	5510	6380	6960	7540	8120	9280	2'90
4074	4365	4656	4947	5238	5529	6402	6984	7566	8148	9312	2'91
4088	4380	4672	4964	5256	5548	6424	7008	7592	8176	9344	2'92
4102	4395	4688	4981	5274	5567	6446	7032	7618	8204	9376	2'93
4116	4410	4704	4998	5292	5586	6468	7056	7644	8232	9408	2'94
4130	4425	4720	5015	5310	5605	6490	7080	7670	8260	9440	2'95
4144	4440	4736	5032	5328	5624	6512	7104	7696	8288	9472	2'96
4158	4455	4752	5049	5346	5643	6534	7128	7722	8316	9504	2'97
4172	4470	4768	5066	5364	5662	6556	7152	7748	8344	9536	2'98
4186	4485	4784	5083	5382	5681	6578	7176	7774	8372	9568	2'99
4200	4500	4800	5100	5400	5700	6600	7200	7800	8400	9600	3'00

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT										
	2	3	4	5	6	7	8	9	11	12	13
3'01	602	903	1204	1505	1806	2107	2408	2709	3811	3612	3913
3'02	604	906	1208	1510	1812	2114	2416	2718	3822	3624	3926
3'03	606	909	1212	1515	1818	2121	2424	2727	3833	3636	3939
3'04	608	912	1216	1520	1824	2128	2432	2736	3844	3648	3952
3'05	610	915	1220	1525	1830	2135	2440	2745	3856	3660	3965
3'06	612	918	1224	1530	1836	2142	2448	2754	3866	3672	3978
3'07	614	921	1228	1535	1842	2149	2456	2763	3877	3684	3991
3'08	616	924	1232	1540	1848	2156	2464	2772	3888	3696	4004
3'09	618	927	1236	1545	1854	2163	2472	2781	3899	3708	4017
3'10	620	930	1240	1550	1860	2170	2480	2790	3910	3720	4030
3'11	622	933	1244	1555	1866	2177	2488	2799	3921	3732	4043
3'12	624	936	1248	1560	1872	2184	2496	2808	3932	3744	4056
3'13	626	939	1252	1565	1878	2191	2504	2817	3943	3756	4069
3'14	628	942	1256	1570	1884	2198	2512	2826	3954	3768	4082
3'15	630	945	1260	1575	1890	2205	2520	2835	3965	3780	4095
3'16	632	948	1264	1580	1896	2212	2528	2844	3976	3792	4108
3'17	634	951	1268	1585	1902	2219	2536	2855	3987	3804	4121
3'18	636	954	1272	1590	1908	2226	2544	2862	3998	3816	4134
3'19	638	957	1276	1595	1914	2233	2552	2871	4009	3828	4147
3'20	640	960	1280	1600	1920	2240	2560	2880	4020	3840	4160
3'21	642	963	1284	1605	1926	2247	2568	2889	4031	3852	4173
3'22	644	966	1288	1610	1932	2254	2576	2898	4042	3864	4186
3'23	646	969	1292	1615	1938	2261	2584	2907	4053	3876	4199
3'24	648	972	1296	1620	1944	2268	2592	2916	4064	3888	4212
3'25	650	975	1300	1625	1950	2275	2600	2925	4075	3900	4225
3'26	652	978	1304	1630	1956	2282	2608	2934	4086	3912	4238
3'27	654	981	1308	1635	1962	2289	2616	2943	4097	3924	4251
3'28	656	984	1312	1640	1968	2296	2624	2952	4108	3936	4264
3'29	658	987	1316	1645	1974	2303	2632	2961	4119	3948	4277
3'30	660	990	1320	1650	1980	2310	2640	2970	4130	3960	4290
3'31	662	993	1324	1655	1986	2317	2648	2979	4141	3972	4303
3'32	664	996	1328	1660	1992	2324	2656	2988	4152	3984	4316
3'33	666	999	1332	1665	1998	2331	2664	2997	4163	3996	4329
3'34	668	1002	1336	1670	2004	2338	2672	3006	4174	4008	4342
3'35	670	1005	1340	1675	2010	2345	2680	3015	4185	4020	4355
3'36	672	1008	1344	1680	2016	2352	2688	3024	4196	4032	4368
3'37	674	1011	1348	1685	2022	2359	2696	3033	4207	4044	4381
3'38	676	1014	1352	1690	2028	2366	2704	3042	4218	4056	4394
3'39	678	1017	1356	1695	2034	2373	2712	3051	4229	4068	4407
3'40	680	1020	1360	1700	2040	2380	2720	3060	4240	4080	4420
3'41	682	1023	1364	1705	2046	2387	2728	3069	4251	4092	4433
3'42	684	1026	1368	1710	2052	2394	2736	3078	4262	4104	4446
3'43	686	1029	1372	1715	2058	2401	2744	3087	4273	4116	4459
3'44	688	1032	1376	1720	2064	2408	2752	3096	4284	4128	4472
3'45	690	1035	1380	1725	2070	2415	2760	3105	4295	4140	4485
3'46	692	1038	1384	1730	2076	2422	2768	3114	4306	4152	4498
3'47	694	1041	1388	1735	2082	2429	2776	3123	4317	4164	4511
3'48	696	1044	1392	1740	2088	2436	2784	3132	4328	4176	4524
3'49	698	1047	1396	1745	2094	2443	2792	3141	4339	4188	4537
3'50	700	1050	1400	1750	2100	2450	2800	3150	4350	4200	4550

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.											Depth in Feet.
14	15	16	17	18	19	22	24	26	28	32	
4214	4515	4816	5117	5418	5719	6622	7224	7826	8428	9632	3 01
4228	4580	4882	5184	5486	5788	6644	7248	7852	8456	9664	3 02
4242	4545	4848	5151	5454	5757	6656	7272	7878	8484	9696	3 03
4256	4560	4864	5168	5472	5776	6688	7296	7904	8512	9728	3 04
4270	4575	4880	5185	5490	5793	6710	7320	7930	8540	9760	3 05
4284	4590	4896	5202	5508	5814	6782	7344	7956	8568	9792	3 06
4298	4605	4912	5219	5526	5833	6784	7368	7982	8596	9824	3 07
4312	4620	4928	5236	5544	5852	6776	7392	8008	8624	9856	3 08
4326	4635	4944	5253	5562	5871	6798	7416	8034	8652	9888	3 09
4340	4650	4960	5270	5580	5890	6820	7440	8060	8680	9920	3 10
4354	4665	4976	5287	5598	5909	6842	7464	8086	8708	9952	3 11
4368	4680	4992	5304	5616	5928	6864	7488	8112	8736	9984	3 12
4382	4695	5008	5321	5634	5947	6886	7512	8138	8764	10016	3 13
4396	4710	5024	5338	5652	5966	6908	7536	8164	8792	10048	3 14
4410	4725	5040	5355	5670	5985	6930	7560	8190	8820	10080	3 15
4424	4740	5056	5372	5688	6004	6952	7584	8218	8848	10112	3 16
4438	4755	5072	5389	5706	6023	6974	7608	8242	8876	10144	3 17
4452	4770	5088	5406	5724	6042	6996	7632	8268	8904	10176	3 18
4466	4785	5104	5423	5742	6061	7018	7656	8294	8932	10208	3 19
4480	4800	5120	5440	5760	6080	7040	7680	8320	8960	10240	3 20
4494	4815	5136	5457	5778	6099	7062	7704	8346	8988	10272	3 21
4508	4830	5152	5474	5796	6118	7084	7728	8372	9016	10304	3 22
4522	4845	5168	5491	5814	6137	7106	7752	8398	9044	10336	3 23
4536	4860	5184	5508	5832	6156	7128	7776	8424	9072	10368	3 24
4550	4875	5200	5525	5850	6175	7150	7800	8450	9100	10400	3 25
4564	4890	5216	5542	5868	6194	7172	7824	8476	9128	10432	3 26
4578	4905	5232	5559	5886	6213	7194	7848	8502	9156	10464	3 27
4592	4920	5248	5576	5904	6232	7216	7872	8528	9184	10496	3 28
4606	4935	5264	5593	5922	6251	7238	7896	8554	9212	10528	3 29
4620	4950	5280	5610	5940	6270	7260	7920	8580	9240	10560	3 30
4634	4965	5296	5627	5958	6289	7282	7944	8606	9268	10592	3 31
4648	4980	5312	5644	5976	6308	7304	7968	8632	9296	10624	3 32
4662	4995	5328	5661	5994	6327	7326	7992	8658	9324	10656	3 33
4676	5010	5344	5678	6012	6346	7348	8018	8684	9352	10688	3 34
4690	5025	5360	5695	6030	6365	7370	8040	8710	9380	10720	3 35
4704	5040	5376	5712	6048	6384	7392	8064	8736	9408	10752	3 36
4718	5055	5392	5729	6066	6403	7414	8088	8762	9436	10784	3 37
4732	5070	5408	5746	6084	6422	7436	8112	8788	9464	10816	3 38
4746	5085	5424	5763	6102	6441	7458	8136	8814	9492	10848	3 39
4760	5100	5440	5780	6120	6460	7480	8160	8840	9520	10880	3 40
4774	5115	5456	5797	6138	6479	7502	8184	8866	9548	10912	3 41
4788	5130	5472	5814	6156	6498	7524	8208	8892	9576	10944	3 42
4802	5145	5488	5831	6174	6517	7546	8232	8918	9604	10976	3 43
4816	5160	5504	5848	6192	6536	7568	8256	8944	9632	11008	3 44
4830	5175	5520	5865	6210	6555	7590	8280	8970	9660	11040	3 45
4844	5190	5536	5882	6228	6574	7612	8304	8996	9688	11072	3 46
4858	5205	5552	5899	6246	6593	7634	8328	9022	9716	11104	3 47
4872	5220	5568	5916	6264	6612	7656	8352	9048	9744	11136	3 48
4886	5235	5584	5933	6282	6631	7678	8376	9074	9772	11168	3 49
4900	5250	5600	5950	6300	6650	7700	8400	9100	9800	11200	3 50

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
351	702	1053	1404	1755	2106	2457	2808	3159	3861	4212	4563	
352	704	1056	1408	1760	2112	2464	2816	3168	3872	4224	4576	
353	706	1059	1412	1765	2118	2471	2821	3177	3883	4236	4589	
354	708	1062	1416	1770	2124	2478	2832	3186	3894	4248	4602	
355	710	1065	1420	1775	2130	2485	2840	3195	3905	4260	4615	
356	712	1068	1424	1780	2136	2492	2848	3204	3916	4272	4638	
357	714	1071	1428	1785	2142	2499	2856	3218	3927	4284	4641	
358	716	1074	1432	1790	2148	2506	2864	3222	3938	4296	4654	
359	718	1077	1436	1795	2154	2513	2872	3231	3949	4308	4667	
360	720	1080	1440	1800	2160	2520	2880	3240	3960	4320	4680	
361	722	1083	1444	1805	2166	2527	2888	3249	3971	4332	4693	
362	724	1086	1448	1810	2172	2534	2896	3258	3982	4344	4706	
363	726	1089	1452	1815	2178	2541	2904	3267	3993	4356	4719	
364	728	1092	1456	1820	2184	2548	2912	3276	4004	4368	4732	
365	730	1095	1460	1825	2190	2555	2920	3285	4015	4380	4745	
366	732	1098	1464	1830	2196	2562	2928	3294	4026	4392	4758	
367	734	1101	1468	1835	2202	2569	2936	3303	4037	4404	4771	
368	736	1104	1472	1840	2208	2576	2944	3312	4048	4416	4784	
369	738	1107	1476	1845	2214	2583	2952	3321	4059	4428	4797	
370	740	1110	1480	1850	2220	2590	2960	3330	4070	4440	4810	
371	742	1119	1484	1855	2226	2597	2968	3339	4081	4452	4823	
372	744	1116	1488	1860	2232	2604	2976	3348	4092	4464	4836	
373	746	1119	1492	1865	2238	2611	2984	3357	4103	4476	4849	
374	748	1122	1496	1870	2244	2618	2992	3366	4114	4488	4862	
375	750	1125	1500	1875	2250	2625	3000	3375	4125	4500	4875	
376	752	1128	1504	1880	2256	2632	3008	3384	4136	4512	4888	
377	754	1131	1508	1885	2262	2639	3016	3393	4147	4524	4901	
378	756	1134	1512	1890	2268	2646	3024	3402	4158	4536	4914	
379	758	1137	1516	1895	2274	2653	3032	3411	4169	4548	4927	
380	760	1140	1520	1900	2280	2660	3040	3420	4180	4560	4940	
381	762	1143	1524	1905	2286	2667	3048	3429	4191	4572	4953	
382	764	1146	1528	1910	2292	2674	3056	3438	4202	4584	4966	
383	766	1149	1532	1915	2298	2681	3064	3447	4213	4596	4979	
384	768	1152	1536	1920	2304	2688	3072	3456	4224	4608	4992	
385	770	1155	1540	1925	2310	2695	3080	3465	4235	4620	5005	
386	772	1158	1544	1930	2316	2702	3088	3474	4246	4632	5018	
387	774	1161	1548	1935	2322	2709	3096	3483	4257	4644	5031	
388	776	1164	1552	1940	2328	2716	3104	3492	4268	4656	5044	
389	778	1167	1556	1945	2334	2723	3112	3501	4279	4668	5057	
390	780	1170	1560	1950	2340	2730	3120	3510	4290	4680	5070	
391	782	1173	1564	1955	2346	2737	3128	3519	4301	4692	5083	
392	784	1176	1568	1960	2352	2744	3136	3528	4312	4704	5096	
393	786	1179	1572	1965	2358	2751	3144	3537	4323	4716	5109	
394	788	1182	1576	1970	2364	2758	3152	3546	4334	4728	5122	
395	790	1185	1580	1975	2370	2765	3160	3555	4345	4740	5135	
396	792	1188	1584	1980	2376	2772	3168	3564	4356	4752	5148	
397	794	1191	1588	1985	2382	2779	3176	3573	4367	4764	5161	
398	796	1194	1592	1990	2388	2786	3184	3582	4378	4776	5174	
399	798	1197	1596	1995	2394	2793	3192	3591	4389	4788	5187	
400	800	1200	1600	2000	2400	2800	3200	3600	4400	4800	5200	

Portions of Lengths of 100 Feet. For Areas insert a Decimal
to the Left.

WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
1914	6265	5615	5967	6318	6669	7722	8424	9126	9828	11382	3.51
1928	5280	5632	5984	6336	6688	7741	8443	9145	9847	11394	3.52
1942	5295	5648	6001	6354	6707	7760	8462	9164	9866	11406	3.53
1956	5310	5664	6018	6372	6726	7788	8496	9204	9912	11428	3.54
1970	5325	5680	6035	6390	6745	7810	8520	9230	9940	11450	3.55
1984	5340	5696	6052	6408	6764	7832	8544	9256	9968	11472	3.56
1998	5355	5712	6069	6426	6788	7854	8568	9282	9996	11494	3.57
5012	5370	5728	6086	6444	6802	7876	8592	9308	10024	11516	3.58
5026	5385	5744	6103	6462	6821	7898	8616	9334	10052	11538	3.59
5040	5400	5760	6020	6480	6840	7920	8640	9360	10080	11560	3.60
5054	5415	5776	6137	6498	6859	7943	8664	9386	10108	11582	3.61
5068	5430	5792	6154	6516	6878	7964	8688	9412	10136	11594	3.62
5082	5445	5808	6171	6534	6897	7986	8712	9438	10164	11616	3.63
5096	5460	5824	6188	6552	6916	8008	8736	9464	10192	11638	3.64
5110	5475	5840	6205	6570	6935	8030	8760	9490	10220	11660	3.65
5124	5490	5856	6222	6588	6954	8052	8784	9516	10248	11712	3.66
5138	5505	5872	6239	6606	6978	8074	8808	9542	10276	11744	3.67
5152	5520	5888	6256	6624	6992	8096	8832	9568	10304	11776	3.68
5166	5535	5904	6273	6642	7011	8118	8856	9594	10332	11808	3.69
5180	5550	5920	6290	6660	7030	8140	8880	9620	10360	11840	3.70
5194	5565	5936	6307	6678	7049	8162	8904	9646	10388	11872	3.71
5208	5580	5952	6324	6696	7068	8184	8928	9672	10416	11904	3.72
5222	5595	5968	6341	6714	7087	8206	8952	9698	10444	11936	3.73
5236	5610	5984	6358	6732	7106	8228	8976	9724	10472	11968	3.74
5250	5625	6000	6375	6750	7125	8250	9000	9750	10500	12000	3.75
5264	5640	6016	6392	6768	7144	8272	9024	9776	10528	12032	3.76
5278	5655	6032	6409	6786	7163	8294	9048	9802	10556	12064	3.77
5292	5670	6048	6426	6804	7182	8316	9072	9828	10584	12096	3.78
5306	5685	6064	6443	6822	7201	8338	9096	9854	10612	12128	3.79
5320	5700	6080	6460	6840	7220	8360	9120	9880	10640	12160	3.80
5334	5715	6096	6477	6858	7239	8382	9144	9906	10668	12192	3.81
5348	5730	6112	6494	6876	7258	8404	9168	9932	10696	12224	3.82
5362	5745	6128	6511	6894	7277	8426	9192	9958	10724	12256	3.83
5376	5760	6144	6528	6912	7296	8448	9216	9984	10752	12288	3.84
5390	5775	6160	6545	6930	7315	8470	9240	10010	10780	12320	3.85
5404	5790	6176	6562	6948	7334	8492	9264	10036	10808	12352	3.86
5418	5805	6192	6579	6966	7353	8514	9288	10062	10836	12384	3.87
5432	5820	6208	6596	6984	7372	8536	9312	10088	10864	12416	3.88
5446	5835	6224	6613	7002	7391	8558	9336	10114	10892	12448	3.89
5460	5850	6240	6630	7020	7410	8580	9360	10140	10920	12480	3.90
5474	5865	6256	6647	7038	7429	8602	9384	10166	10948	12512	3.91
5488	5880	6272	6664	7056	7448	8624	9408	10192	10976	12544	3.92
5502	5895	6288	6681	7074	7467	8646	9432	10218	11004	12576	3.93
5516	5910	6304	6698	7092	7486	8668	9456	10244	11032	12608	3.94
5530	5925	6320	6715	7110	7506	8690	9480	10270	11060	12640	3.95
5544	5940	6336	6732	7128	7524	8712	9504	10296	11088	12672	3.96
5558	5955	6352	6749	7146	7543	8734	9528	10322	11116	12704	3.97
5572	5970	6368	6766	7164	7562	8756	9552	10348	11144	12736	3.98
5586	5985	6384	6783	7182	7581	8778	9576	10374	11172	12768	3.99
5600	6000	6400	6800	7200	7600	8800	9600	10400	11200	12800	4.00

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Price

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT										
	2	3	4	5	6	7	8	9	11	12	13
4'01	802	1203	1604	2005	2406	2807	3208	3609	4411	4812	5213
4'02	804	1206	1608	2010	2412	2814	3216	3618	4422	4824	5226
4'03	806	1209	1612	2015	2418	2821	3224	3627	4433	4836	5239
4'04	808	1212	1616	2020	2424	2828	3232	3636	4444	4848	5252
4'05	810	1215	1620	2025	2430	2835	3240	3645	4455	4860	5265
4'06	812	1218	1624	2030	2436	2842	3248	3654	4466	4872	5278
4'07	814	1221	1628	2035	2442	2849	3256	3663	4477	4884	5291
4'08	816	1224	1632	2040	2448	2856	3264	3672	4488	4896	5304
4'09	818	1227	1636	2045	2454	2863	3272	3681	4499	4908	5317
4'10	820	1230	1640	2050	2460	2870	3280	3690	4510	4920	5330
4'11	822	1233	1644	2055	2466	2877	3288	3699	4521	4932	5343
4'12	824	1236	1648	2060	2472	2884	3296	3708	4532	4944	5356
4'13	826	1239	1652	2065	2478	2891	3304	3717	4543	4956	5369
4'14	828	1242	1656	2070	2484	2898	3312	3726	4554	4968	5382
4'15	830	1245	1660	2075	2490	2905	3320	3735	4565	4980	5395
4'16	832	1248	1664	2080	2496	2912	3328	3744	4576	4992	5408
4'17	834	1251	1668	2085	2502	2919	3336	3753	4587	5004	5421
4'18	836	1254	1672	2090	2508	2926	3344	3762	4598	5016	5434
4'19	838	1257	1676	2095	2514	2933	3352	3771	4609	5028	5447
4'20	840	1260	1680	2100	2520	2940	3360	3780	4620	5040	5460
4'21	842	1263	1684	2105	2526	2947	3368	3789	4631	5052	5473
4'22	844	1266	1688	2110	2532	2954	3376	3798	4642	5064	5486
4'23	846	1269	1692	2115	2538	2961	3384	3807	4653	5076	5499
4'24	848	1272	1696	2120	2544	2968	3392	3816	4664	5088	5512
4'25	850	1275	1700	2125	2550	2975	3400	3825	4675	5100	5525
4'26	852	1278	1704	2130	2556	2982	3408	3834	4686	5112	5538
4'27	854	1281	1708	2135	2562	2989	3416	3843	4697	5124	5551
4'28	856	1284	1712	2140	2568	2996	3424	3852	4708	5136	5564
4'29	858	1287	1716	2145	2574	3003	3432	3861	4719	5148	5577
4'30	860	1290	1720	2150	2580	3010	3440	3870	4730	5160	5590
4'31	862	1293	1724	2155	2586	3017	3448	3879	4741	5172	5603
4'32	864	1296	1728	2160	2592	3024	3456	3888	4752	5184	5616
4'33	866	1299	1732	2165	2598	3031	3464	3897	4763	5196	5629
4'34	868	1302	1736	2170	2604	3038	3472	3906	4774	5208	5642
4'35	870	1305	1740	2175	2610	3045	3480	3915	4785	5220	5655
4'36	872	1308	1744	2180	2616	3052	3488	3924	4796	5232	5668
4'37	874	1311	1748	2185	2622	3059	3496	3933	4807	5244	5681
4'38	876	1314	1752	2190	2628	3066	3504	3942	4818	5256	5694
4'39	878	1317	1756	2195	2634	3073	3512	3951	4829	5268	5707
4'40	880	1320	1760	2200	2640	3080	3520	3960	4840	5280	5720
4'41	882	1323	1764	2205	2646	3087	3528	3969	4851	5292	5733
4'42	884	1326	1768	2210	2652	3094	3536	3978	4862	5304	5746
4'43	886	1329	1772	2215	2658	3101	3544	3987	4873	5316	5759
4'44	888	1332	1776	2220	2664	3108	3552	3996	4884	5328	5772
4'45	890	1335	1780	2225	2670	3115	3560	4006	4895	5340	5785
4'46	892	1338	1784	2230	2676	3122	3568	4014	4906	5352	5798
4'47	894	1341	1788	2235	2682	3129	3576	4023	4917	5364	5811
4'48	896	1344	1792	2240	2688	3136	3584	4032	4928	5376	5824
4'49	898	1347	1796	2245	2694	3143	3592	4041	4939	5388	5837
4'50	900	1350	1800	2250	2700	3150	3600	4050	4950	5400	5850

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
5614	6015	6416	6817	7218	7619	8822	9624	10426	11228	12832	4'01
5626	6030	6432	6834	7236	7638	8844	9648	10452	11256	12864	4'02
5642	6045	6448	6851	7254	7657	8866	9672	10478	11284	12896	4'03
5656	6060	6464	6865	7272	7678	8888	9696	10504	11312	12928	4'04
5670	6075	6480	6885	7290	7695	8910	9720	10530	11340	12960	4'05
5684	6090	6496	6902	7308	7714	8932	9744	10568	11368	12992	4'06
5698	6105	6512	6919	7326	7738	8964	9768	10582	11396	13024	4'07
5712	6120	6528	6936	7344	7752	8978	9792	10608	11424	13056	4'08
5726	6135	6544	6953	7362	7771	8998	9816	10634	11452	13088	4'09
5740	6150	6560	6970	7380	7790	9020	9840	10660	11480	13120	4'10
5784	6165	6576	6987	7398	7809	9042	9864	10686	11508	13152	4'11
5768	6180	6592	7004	7416	7828	9064	9888	10712	11536	13184	4'12
5782	6195	6608	7021	7434	7847	9086	9912	10738	11564	13216	4'13
5796	6210	6624	7038	7452	7866	9108	9936	10764	11592	13248	4'14
5810	6225	6640	7055	7470	7885	9130	9960	10790	11620	13280	4'15
5824	6240	6656	7072	7488	7904	9152	9984	10816	11648	13312	4'16
5838	6255	6672	7089	7506	7928	9174	10008	10842	11676	13344	4'17
5852	6270	6688	7106	7524	7942	9196	10032	10868	11704	13376	4'18
5866	6285	6704	7123	7542	7961	9218	10056	10894	11732	13408	4'19
5880	6300	6720	7140	7560	7980	9240	10080	10920	11760	13440	4'20
5894	6315	6736	7157	7578	7999	9262	10104	10946	11788	13472	4'21
5908	6330	6752	7174	7596	8018	9284	10128	10972	11816	13504	4'22
5922	6345	6768	7191	7614	8037	9306	10152	10998	11844	13536	4'23
5936	6360	6784	7208	7632	8056	9328	10176	11024	11872	13568	4'24
5950	6375	6800	7225	7650	8075	9350	10200	11050	11900	13600	4'25
5964	6390	6816	7242	7668	8094	9372	10224	11076	11928	13632	4'26
5978	6405	6832	7259	7686	8113	9394	10248	11102	11956	13664	4'27
5992	6420	6848	7276	7704	8132	9416	10272	11128	11984	13696	4'28
6006	6435	6864	7293	7722	8151	9438	10296	11154	12012	13728	4'29
6020	6450	6880	7310	7740	8170	9460	10320	11180	12040	13760	4'30
6084	6465	6896	7327	7758	8189	9483	10344	11206	12068	13792	4'31
6048	6480	6912	7344	7776	8208	9504	10368	11232	12096	13824	4'32
6063	6495	6928	7361	7794	8227	9526	10392	11258	12124	13856	4'33
6078	6510	6944	7378	7812	8246	9548	10416	11284	12152	13888	4'34
6090	6525	6960	7395	7830	8265	9570	10440	11310	12180	13920	4'35
6104	6540	6976	7412	7848	8284	9592	10464	11336	12208	13952	4'36
6118	6555	6992	7429	7866	8303	9614	10488	11362	12236	13984	4'37
6132	6570	7008	7446	7884	8322	9636	10512	11388	12264	14016	4'38
6146	6585	7024	7463	7902	8341	9658	10536	11414	12292	14048	4'39
6160	6600	7040	7480	7920	8360	9680	10560	11440	12320	14080	4'40
6174	6615	7056	7497	7938	8379	9702	10584	11466	12348	14112	4'41
6188	6630	7072	7514	7956	8398	9724	10608	11492	12376	14144	4'42
6202	6645	7088	7531	7974	8417	9746	10632	11518	12404	14176	4'43
6216	6660	7104	7548	7992	8436	9768	10656	11544	12432	14208	4'44
6230	6675	7120	7565	8010	8455	9790	10680	11570	12460	14240	4'45
6244	6690	7136	7582	8028	8474	9812	10704	11596	12488	14272	4'46
6258	6705	7152	7599	8046	8493	9834	10728	11622	12516	14304	4'47
6272	6720	7168	7616	8064	8512	9856	10752	11648	12544	14336	4'48
6286	6735	7184	7633	8082	8531	9878	10776	11674	12572	14368	4'49
6300	6750	7200	7650	8100	8550	9900	10800	11700	12600	14400	4'50

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
4-51	902	1353	1804	2255	2706	3157	3608	4059	4961	5412	5863	
4-52	904	1356	1808	2260	2712	3164	3616	4068	4972	5424	5876	
4-53	906	1359	1812	2265	2718	3171	3624	4077	4988	5436	5889	
4-54	908	1362	1816	2270	2724	3178	3632	4086	4994	5448	5902	
4-55	910	1365	1820	2275	2730	3185	3640	4095	5005	5460	5915	
4-56	912	1368	1824	2280	2736	3192	3648	4104	5016	5472	5928	
4-57	914	1371	1828	2285	2742	3199	3656	4113	5027	5484	5941	
4-58	916	1374	1832	2290	2748	3206	3664	4122	5038	5496	5954	
4-59	918	1377	1836	2295	2754	3213	3673	4131	5049	5508	5967	
4-60	920	1380	1840	2300	2760	3220	3680	4140	5060	5520	5980	
4-61	922	1383	1844	2305	2766	3227	3688	4149	5071	5532	5993	
4-62	924	1386	1848	2310	2772	3234	3696	4158	5082	5544	6006	
4-63	926	1389	1852	2315	2778	3241	3704	4167	5093	5556	6019	
4-64	928	1392	1856	2320	2784	3248	3712	4176	5104	5568	6032	
4-65	930	1395	1860	2325	2790	3255	3720	4185	5115	5580	6045	
4-66	932	1398	1864	2330	2796	3262	3728	4194	5126	5592	6058	
4-67	934	1401	1868	2335	2802	3269	3736	4203	5137	5604	6071	
4-68	936	1404	1872	2340	2808	3276	3744	4212	5148	5616	6084	
4-69	938	1407	1876	2345	2814	3283	3752	4221	5159	5628	6097	
4-70	940	1410	1880	2350	2820	3290	3760	4230	5170	5640	6110	
4-71	942	1413	1884	2355	2826	3297	3768	4239	5181	5652	6123	
4-72	944	1416	1888	2360	2832	3304	3776	4248	5192	5664	6136	
4-73	946	1419	1892	2365	2838	3311	3784	4257	5203	5676	6149	
4-74	948	1422	1896	2370	2844	3318	3792	4266	5214	5688	6163	
4-75	950	1425	1900	2375	2850	3325	3800	4275	5225	5700	6175	
4-76	952	1428	1904	2380	2856	3332	3808	4284	5236	5712	6188	
4-77	954	1431	1908	2385	2862	3339	3816	4293	5247	5724	6201	
4-78	956	1434	1912	2390	2868	3346	3824	4302	5258	5736	6214	
4-79	958	1437	1916	2395	2874	3353	3832	4311	5269	5748	6227	
4-80	960	1440	1920	2400	2880	3360	3840	4320	5280	5760	6240	
4-81	962	1443	1924	2405	2886	3367	3848	4329	5291	5772	6253	
4-82	964	1446	1928	2410	2892	3374	3856	4338	5302	5784	6266	
4-83	966	1449	1932	2415	2898	3381	3864	4347	5313	5796	6279	
4-84	968	1452	1936	2420	2904*	3388	3872	4356	5324	5808	6292	
4-85	970	1455	1940	2425	2910	3395	3880	4365	5335	5820	6305	
4-86	972	1458	1944	2430	2916	3402	3888	4374	5346	5832	6318	
4-87	974	1461	1948	2435	2922	3409	3896	4383	5357	5844	6331	
4-88	976	1464	1952	2440	2928	3416	3904	4392	5368	5856	6344	
4-89	978	1467	1956	2445	2934	3423	3912	4401	5379	5868	6357	
4-90	980	1470	1960	2450	2940	3430	3920	4410	5390	5880	6370	
4-91	982	1473	1964	2455	2946	3437	3928	4419	5401	5892	6383	
4-92	984	1476	1968	2460	2952	3444	3936	4428	5412	5904	6396	
4-93	986	1479	1972	2465	2958	3451	3944	4437	5423	5916	6409	
4-94	988	1482	1976	2470	2964	3458	3952	4446	5434	5928	6422	
4-95	990	1485	1980	2475	2970	3465	3960	4455	5445	5940	6435	
4-96	992	1488	1984	2480	2976	3472	3968	4464	5456	5952	6448	
4-97	994	1491	1988	2485	2982	3479	3976	4473	5467	5964	6461	
4-98	996	1494	1992	2490	2988	3486	3984	4482	5478	5976	6474	
4-99	998	1497	1996	2495	2994	3493	3992	4491	5489	5988	6487	
5-00	1000	1500	2000	2500	3000	3500	4000	4500	5500	6000	6500	

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

28 WIDTH OF BASE OF CUTTING IN FEET.											Depth in Feet.
14	15	16	17	18	19	22	24	26	28	32	
6814	6768	7216	7667	8118	8569	9022	10824	11726	12628	14432	4.51
6828	6780	7232	7684	8136	8588	9044	10848	11752	12656	14464	4.52
6842	6796	7248	7701	8154	8607	9066	10872	11778	12684	14496	4.53
6856	6810	7264	7718	8172	8626	9088	10896	11804	12712	14528	4.54
6870	6825	7280	7735	8190	8645	10010	10920	11830	12740	14560	4.55
6884	6840	7296	7752	8208	8664	10032	10944	11856	12768	14592	4.56
6898	6856	7312	7769	8226	8685	10054	10968	11882	12798	14624	4.57
6912	6870	7328	7788	8244	8702	10076	10992	11908	12824	14656	4.58
6926	6886	7344	7803	8262	8721	10098	11016	11934	12852	14688	4.59
6940	6900	7360	7820	8280	8740	10120	11040	11960	12880	14720	4.60
6954	6916	7376	7837	8298	8759	10142	11064	11988	12908	14752	4.61
6968	6930	7392	7854	8316	8778	10164	11088	12012	12936	14784	4.62
6982	6946	7408	7871	8334	8797	10186	11112	12038	12964	14816	4.63
6996	6960	7424	7888	8352	8816	10208	11136	12064	12992	14848	4.64
7010	6976	7440	7906	8370	8835	10230	11160	12090	13020	14880	4.65
7024	6990	7456	7923	8388	8854	10252	11184	12116	13048	14912	4.66
7038	7005	7472	7939	8406	8873	10274	11208	12142	13076	14944	4.67
7052	7020	7488	7956	8424	8892	10296	11232	12168	13104	14976	4.68
7066	7035	7504	7973	8442	8911	10318	11256	12194	13132	15008	4.69
7080	7050	7520	7990	8460	8930	10340	11280	12220	13160	15040	4.70
7094	7065	7536	8007	8478	8949	10362	11304	12246	13188	15072	4.71
7108	7080	7552	8024	8496	8968	10384	11328	12272	13216	15104	4.72
7122	7096	7568	8041	8514	8987	10406	11352	12298	13244	15136	4.73
7136	7110	7584	8058	8532	9006	10428	11376	12324	13272	15168	4.74
7150	7126	7600	8075	8550	9025	10450	11400	12350	13300	15200	4.75
7164	7140	7616	8092	8568	9044	10472	11424	12376	13328	15232	4.76
7178	7156	7632	8109	8586	9063	10494	11448	12402	13356	15264	4.77
7192	7170	7648	8126	8604	9082	10516	11472	12428	13384	15296	4.78
7206	7185	7664	8143	8622	9101	10538	11496	12454	13412	15328	4.79
7220	7200	7680	8160	8640	9120	10560	11520	12480	13440	15360	4.80
7234	7216	7696	8177	8658	9139	10582	11544	12506	13468	15392	4.81
7248	7230	7712	8194	8676	9158	10604	11568	12532	13496	15424	4.82
7262	7245	7728	8211	8694	9177	10626	11592	12558	13524	15456	4.83
7276	7260	7744	8228	8712	9196	10648	11616	12584	13552	15488	4.84
7290	7275	7760	8245	8730	9215	10670	11640	12610	13580	15520	4.85
7304	7290	7776	8262	8748	9234	10692	11664	12636	13608	15552	4.86
7318	7305	7792	8279	8766	9253	10714	11688	12662	13636	15584	4.87
7332	7320	7808	8296	8784	9272	10736	11712	12688	13664	15616	4.88
7346	7335	7824	8313	8802	9291	10758	11736	12714	13692	15648	4.89
7360	7350	7840	8330	8820	9310	10780	11760	12740	13720	15680	4.90
7374	7366	7856	8347	8838	9329	10802	11784	12766	13748	15712	4.91
7388	7380	7872	8364	8856	9348	10824	11808	12792	13776	15744	4.92
7402	7395	7888	8381	8874	9367	10846	11832	12818	13804	15776	4.93
7416	7410	7904	8398	8892	9386	10868	11856	12844	13832	15808	4.94
7430	7425	7920	8415	8910	9405	10890	11880	12870	13860	15840	4.95
7444	7440	7936	8432	8928	9424	10912	11904	12896	13888	15872	4.96
7458	7455	7952	8449	8946	9443	10934	11928	12922	13916	15904	4.97
7472	7470	7968	8466	8964	9462	10956	11952	12948	13944	15936	4.98
7486	7485	7984	8483	8982	9481	10978	11976	12974	13972	15968	4.99
7500	7500	8000	8500	9000	9500	11000	12000	13000	14000	16000	5.00

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
5'01	1002	1503	2004	2505	3006	3507	4008	4509	5511	6012	6513	
5'02	1004	1506	2008	2510	3012	3514	4016	4518	5522	6024	6526	
5'03	1006	1509	2012	2515	3018	3521	4024	4527	5533	6036	6539	
5'04	1008	1512	2016	2520	3024	3528	4032	4536	5544	6048	6552	
5'05	1010	1516	2020	2525	3030	3535	4040	4545	5555	6060	6565	
5'06	1012	1518	2024	2530	3036	3542	4048	4551	5566	6072	6578	
5'07	1014	1521	2028	2535	3042	3549	4056	4558	5577	6084	6581	
5'08	1016	1524	2032	2540	3048	3556	4064	4572	5588	6096	6604	
5'09	1018	1527	2036	2545	3054	3563	4072	4581	5599	6108	6617	
5'10	1020	1530	2040	2550	3060	3570	4080	4590	5610	6120	6630	
5'11	1022	1533	2044	2555	3066	3577	4088	4599	5621	6132	6643	
5'12	1024	1536	2048	2560	3072	3584	4096	4608	5632	6144	6656	
5'13	1026	1539	2052	2565	3078	3591	4104	4617	5643	6156	6669	
5'14	1028	1542	2056	2570	3084	3598	4112	4626	5654	6168	6682	
5'15	1030	1545	2060	2575	3090	3605	4120	4636	5665	6180	6695	
5'16	1032	1548	2064	2580	3096	3612	4128	4644	5676	6192	6708	
5'17	1034	1551	2068	2585	3102	3619	4136	4653	5687	6204	6721	
5'18	1036	1554	2072	2590	3108	3626	4144	4662	5698	6216	6734	
5'19	1038	1557	2076	2595	3114	3633	4152	4671	5709	6228	6747	
5'20	1040	1560	2080	2600	3120	3640	4160	4680	5720	6240	6760	
5'21	1042	1563	2084	2605	3126	3647	4168	4689	5731	6252	6773	
5'22	1044	1566	2088	2610	3132	3654	4176	4698	5742	6264	6786	
5'23	1046	1569	2092	2615	3138	3661	4184	4707	5753	6276	6799	
5'24	1048	1572	2096	2620	3144	3668	4192	4716	5764	6288	6812	
5'25	1050	1575	2100	2625	3150	3675	4200	4725	5775	6300	6825	
5'26	1052	1578	2104	2630	3156	3682	4208	4734	5786	6312	6838	
5'27	1054	1581	2108	2635	3162	3689	4216	4743	5797	6324	6851	
5'28	1056	1584	2112	2640	3168	3696	4224	4752	5808	6336	6864	
5'29	1058	1587	2116	2645	3174	3703	4232	4761	5819	6348	6877	
5'30	1060	1590	2120	2650	3180	3710	4240	4770	5830	6360	6890	
5'31	1062	1593	2124	2655	3186	3717	4248	4779	5841	6372	6903	
5'32	1064	1596	2128	2660	3192	3724	4256	4788	5852	6384	6916	
5'33	1066	1599	2132	2665	3198	3731	4264	4797	5863	6396	6929	
5'34	1068	1602	2136	2670	3204	3738	4272	4806	5874	6408	6942	
5'35	1070	1605	2140	2675	3210	3745	4280	4815	5885	6420	6955	
5'36	1072	1608	2144	2680	3216	3752	4288	4824	5896	6432	6968	
5'37	1074	1611	2148	2685	3222	3759	4296	4833	5907	6444	6981	
5'38	1076	1614	2152	2690	3228	3766	4304	4842	5918	6456	6994	
5'39	1078	1617	2156	2695	3234	3773	4312	4851	5929	6468	7007	
5'40	1080	1620	2160	2700	3240	3780	4320	4860	5940	6480	7020	
5'41	1082	1623	2164	2705	3246	3787	4328	4869	5951	6492	7033	
5'42	1084	1626	2168	2710	3252	3794	4336	4878	5962	6504	7046	
5'43	1086	1629	2172	2715	3258	3801	4344	4887	5973	6516	7059	
5'44	1088	1632	2176	2720	3264	3808	4352	4896	5984	6528	7072	
5'45	1090	1635	2180	2725	3270	3815	4360	4905	5995	6540	7085	
5'46	1092	1638	2184	2730	3276	3822	4368	4914	6006	6552	7098	
5'47	1094	1641	2188	2735	3282	3829	4376	4923	6017	6564	7111	
5'48	1096	1644	2192	2740	3288	3836	4384	4932	6028	6576	7124	
5'49	1098	1647	2196	2745	3294	3843	4392	4941	6039	6588	7137	
5'50	1100	1650	2200	2750	3300	3850	4400	4950	6050	6600	7150	

Portions of Lengths of 100 Feet. For Areas Insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
7014	7515	8016	8517	9018	9519	11022	12024	13026	14028	16032	5.01
7028	7580	8082	8584	9086	9588	11044	12048	13052	14056	16064	5.02
7042	7545	8048	8551	9054	9557	11066	12072	13078	14084	16096	5.03
7056	7560	8064	8568	9072	9576	11088	12096	13104	14112	16128	5.04
7070	7575	8080	8585	9090	9595	11110	12120	13130	14140	16160	5.05
7084	7590	8096	8602	9108	9614	11132	12144	13156	14168	16192	5.06
7098	7606	8112	8619	9126	9633	11154	12168	13182	14196	16224	5.07
7112	7620	8128	8636	9144	9652	11176	12192	13208	14224	16256	5.08
7126	7635	8144	8653	9162	9671	11198	12216	13234	14252	16288	5.09
7140	7650	8160	8670	9180	9690	11220	12240	13260	14280	16320	5.10
7154	7665	8176	8687	9198	9709	11242	12264	13286	14308	16352	5.11
7168	7680	8192	8704	9216	9728	11264	12288	13312	14336	16384	5.12
7182	7695	8208	8721	9234	9747	11286	12312	13338	14364	16416	5.13
7196	7710	8224	8738	9252	9766	11308	12336	13364	14392	16448	5.14
7210	7725	8240	8755	9270	9785	11330	12360	13390	14420	16480	5.15
7224	7740	8256	8772	9288	9804	11352	12384	13416	14448	16512	5.16
7238	7755	8272	8789	9306	9823	11374	12408	13442	14476	16544	5.17
7252	7770	8288	8806	9324	9842	11396	12432	13468	14504	16576	5.18
7266	7785	8304	8823	9342	9861	11418	12456	13494	14532	16608	5.19
7280	7800	8320	8840	9360	9880	11440	12480	13520	14560	16640	5.20
7294	7815	8336	8857	9378	9899	11462	12504	13546	14588	16672	5.21
7308	7830	8352	8874	9396	9918	11484	12528	13572	14616	16704	5.22
7322	7845	8368	8891	9414	9937	11506	12552	13598	14644	16736	5.23
7336	7860	8384	8908	9432	9956	11528	12576	13624	14672	16768	5.24
7350	7875	8400	8925	9450	9975	11550	12600	13650	14700	16800	5.25
7364	7890	8416	8942	9468	9994	11572	12624	13676	14728	16832	5.26
7378	7905	8432	8959	9486	10013	11594	12648	13702	14756	16864	5.27
7392	7920	8448	8976	9504	10032	11616	12672	13728	14784	16896	5.28
7406	7935	8464	8993	9522	10051	11638	12696	13754	14812	16928	5.29
7420	7950	8480	9010	9540	10070	11660	12720	13780	14840	16960	5.30
7434	7965	8496	9027	9558	10089	11682	12744	13806	14868	16992	5.31
7448	7980	8512	9044	9576	10108	11704	12768	13832	14896	17024	5.32
7462	7995	8528	9061	9594	10127	11726	12792	13858	14924	17056	5.33
7476	8010	8544	9078	9612	10146	11748	12816	13884	14952	17088	5.34
7490	8025	8560	9095	9630	10165	11770	12840	13910	14980	17120	5.35
7504	8040	8576	9112	9648	10184	11792	12864	13936	15008	17152	5.36
7518	8055	8592	9129	9666	10203	11814	12888	13963	15036	17184	5.37
7532	8070	8608	9146	9684	10222	11836	12912	13988	15064	17216	5.38
7546	8085	8624	9163	9702	10241	11858	12936	14014	15092	17248	5.39
7560	8100	8640	9180	9720	10260	11880	12960	14040	15120	17280	5.40
7574	8115	8656	9197	9738	10279	11902	12984	14066	15148	17312	5.41
7588	8130	8672	9214	9756	10298	11924	13008	14092	15176	17344	5.42
7602	8145	8688	9231	9774	10317	11946	13032	14118	15204	17376	5.43
7616	8160	8704	9248	9792	10336	11968	13056	14144	15232	17408	5.44
7630	8175	8720	9265	9810	10355	11990	13080	14170	15260	17440	5.45
7644	8190	8736	9282	9828	10374	12012	13104	14196	15288	17472	5.46
7658	8205	8752	9299	9846	10393	12034	13128	14222	15316	17504	5.47
7672	8220	8768	9316	9864	10412	12056	13152	14248	15344	17536	5.48
7686	8235	8784	9333	9882	10431	12078	13176	14274	15372	17568	5.49
7700	8250	8800	9350	9900	10450	12100	13200	14300	15400	17600	5.50

TABLE I.—Contents of Earthwork in Cubic Feet of Central
Point Two Pitches

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT										
	2	3	4	5	6	7	8	9	11	12	13
5.51	1102	1653	2204	2755	3306	3857	4408	4959	6061	6612	7163
5.52	1104	1656	2208	2760	3312	3864	4416	4968	6072	6624	7176
5.53	1106	1659	2212	2765	3318	3871	4424	4977	6083	6636	7189
5.54	1108	1662	2216	2770	3324	3878	4432	4986	6094	6648	7202
5.55	1110	1665	2220	2775	3330	3885	4440	4995	6105	6660	7215
5.56	1112	1668	2224	2780	3336	3892	4448	5004	6116	6672	7228
5.57	1114	1671	2228	2785	3342	3899	4456	5013	6127	6684	7241
5.58	1116	1674	2232	2790	3348	3906	4464	5022	6138	6696	7254
5.59	1118	1677	2236	2795	3354	3913	4472	5031	6149	6708	7267
5.60	1120	1680	2240	2800	3360	3920	4480	5040	6160	6720	7280
5.61	1122	1683	2244	2805	3366	3927	4488	5049	6171	6732	7293
5.62	1124	1686	2248	2810	3372	3934	4496	5058	6182	6744	7306
5.63	1126	1689	2252	2815	3378	3941	4504	5067	6193	6756	7319
5.64	1128	1692	2256	2820	3384	3948	4512	5076	6204	6768	7332
5.65	1130	1695	2260	2825	3390	3955	4520	5085	6215	6780	7345
5.66	1132	1698	2264	2830	3396	3962	4528	5094	6226	6792	7358
5.67	1134	1701	2268	2835	3402	3969	4536	5103	6237	6804	7371
5.68	1136	1704	2272	2840	3408	3976	4544	5112	6248	6816	7384
5.69	1138	1707	2276	2845	3414	3983	4552	5121	6259	6828	7397
5.70	1140	1710	2280	2850	3420	3990	4560	5130	6270	6840	7410
5.71	1142	1713	2284	2855	3426	3997	4568	5139	6281	6852	7423
5.72	1144	1716	2288	2860	3432	4004	4576	5148	6292	6864	7436
5.73	1146	1719	2292	2865	3438	4011	4584	5157	6303	6876	7449
5.74	1148	1722	2296	2870	3444	4018	4592	5166	6314	6888	7462
5.75	1150	1726	2300	2875	3450	4025	4600	5175	6325	6900	7475
5.76	1152	1728	2304	2880	3456	4032	4608	5184	6336	6912	7488
5.77	1154	1731	2308	2885	3462	4039	4616	5193	6347	6924	7501
5.78	1156	1734	2312	2890	3468	4046	4624	5202	6358	6936	7514
5.79	1158	1737	2316	2895	3474	4053	4632	5211	6369	6948	7527
5.80	1160	1740	2320	2900	3480	4060	4640	5220	6380	6960	7540
5.81	1162	1743	2324	2905	3486	4067	4648	5229	6391	6972	7553
5.82	1164	1746	2328	2910	3492	4074	4656	5238	6402	6984	7566
5.83	1166	1749	2332	2915	3498	4081	4664	5247	6413	6996	7579
5.84	1168	1752	2336	2920	3504	4088	4672	5256	6424	7008	7592
5.85	1170	1756	2340	2925	3510	4095	4680	5265	6435	7020	7605
5.86	1172	1758	2344	2930	3516	4102	4688	5274	6446	7032	7618
5.87	1174	1761	2348	2935	3522	4109	4696	5283	6457	7044	7631
5.88	1176	1764	2352	2940	3528	4116	4704	5292	6468	7056	7644
5.89	1178	1767	2356	2945	3534	4123	4712	5301	6479	7068	7657
5.90	1180	1770	2360	2950	3540	4130	4720	5310	6490	7080	7670
5.91	1182	1773	2364	2955	3546	4137	4728	5319	6501	7092	7683
5.92	1184	1776	2368	2960	3552	4144	4736	5328	6512	7104	7696
5.93	1186	1779	2372	2965	3558	4151	4744	5337	6523	7116	7709
5.94	1188	1782	2376	2970	3564	4158	4752	5346	6534	7128	7722
5.95	1190	1786	2380	2975	3570	4165	4760	5355	6545	7140	7735
5.96	1192	1788	2384	2980	3576	4172	4768	5364	6556	7152	7748
5.97	1194	1791	2388	2985	3582	4179	4776	5373	6567	7164	7761
5.98	1196	1794	2392	2990	3588	4186	4784	5382	6578	7176	7774
5.99	1198	1797	2396	2995	3594	4193	4792	5391	6589	7188	7787
6.00	1200	1800	2400	3000	3600	4200	4800	5400	6600	7200	7800

Portions of Lengths of 100 Feet. For Areas insert a Decimal to 1/100 Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
7714	8265	8816	9367	9918	10469	12122	13224	14326	15428	17632	5-51
7728	8280	8832	9384	9936	10488	12144	13248	14352	15456	17664	5-52
7742	8295	8848	9401	9954	10507	12166	13272	14378	15484	17696	5-53
7756	8310	8864	9418	9972	10526	12188	13296	14404	15512	17728	5-54
7770	8325	8880	9435	9990	10545	12210	13320	14430	15540	17760	5-55
7784	8340	8896	9452	10008	10564	12232	13344	14456	15568	17792	5-56
7798	8355	8912	9469	10026	10583	12254	13368	14482	15596	17824	5-57
7812	8370	8928	9486	10044	10602	12276	13392	14508	15624	17856	5-58
7826	8385	8944	9503	10062	10621	12298	13416	14534	15652	17888	5-59
7840	8400	8960	9520	10080	10640	12320	13440	14560	15680	17920	5-60
7854	8415	8976	9537	10098	10659	12342	13464	14586	15708	17952	5-61
7868	8430	8992	9554	10116	10678	12364	13488	14612	15736	17984	5-62
7882	8445	9008	9571	10134	10697	12386	13512	14638	15764	18016	5-63
7896	8460	9024	9588	10152	10716	12408	13536	14664	15792	18048	5-64
7910	8475	9040	9606	10170	10735	12430	13560	14690	15820	18080	5-65
7924	8490	9056	9622	10188	10754	12452	13584	14716	15848	18112	5-66
7938	8505	9072	9639	10206	10773	12474	13608	14742	15876	18144	5-67
7952	8520	9088	9656	10224	10792	12496	13632	14768	15904	18176	5-68
7966	8535	9104	9673	10242	10811	12518	13656	14794	15932	18208	5-69
7980	8550	9120	9690	10260	10830	12540	13680	14820	15960	18240	5-70
7994	8565	9136	9707	10278	10849	12562	13704	14846	15988	18272	5-71
8008	8580	9152	9724	10296	10868	12584	13728	14872	16016	18304	5-72
8022	8595	9168	9741	10314	10887	12606	13752	14898	16044	18336	5-73
8036	8610	9184	9758	10332	10906	12628	13776	14924	16072	18368	5-74
8050	8625	9200	9775	10350	10925	12650	13800	14950	16100	18400	5-75
8064	8640	9216	9792	10368	10944	12672	13824	14976	16128	18432	5-76
8078	8655	9232	9809	10386	10963	12694	13848	15002	16156	18464	5-77
8092	8670	9248	9826	10404	10982	12716	13872	15028	16184	18496	5-78
8106	8685	9264	9843	10422	11001	12738	13896	15054	16212	18528	5-79
8120	8700	9280	9860	10440	11020	12760	13920	15080	16240	18560	5-80
8134	8715	9296	9877	10458	11039	12782	13944	15106	16268	18592	5-81
8148	8730	9312	9894	10476	11058	12804	13968	15132	16296	18624	5-82
8162	8745	9328	9911	10494	11077	12826	13992	15158	16324	18656	5-83
8176	8760	9344	9928	10512	11096	12848	14016	15184	16352	18688	5-84
8190	8775	9360	9945	10530	11115	12870	14040	15210	16380	18720	5-85
8204	8790	9376	9962	10548	11134	12892	14064	15236	16408	18752	5-86
8218	8805	9392	9979	10566	11153	12914	14088	15262	16436	18784	5-87
8232	8820	9408	9996	10584	11172	12936	14112	15288	16464	18816	5-88
8246	8835	9424	10013	10602	11191	12958	14136	15314	16492	18848	5-89
8260	8850	9440	10030	10620	11210	12980	14160	15340	16520	18880	5-90
8274	8865	9456	10047	10638	11229	13002	14184	15366	16548	18912	5-91
8288	8880	9472	10064	10656	11248	13024	14208	15392	16576	18944	5-92
8302	8895	9488	10081	10674	11267	13046	14232	15418	16604	18976	5-93
8316	8910	9504	10098	10692	11285	13068	14256	15444	16632	19008	5-94
8330	8925	9520	10115	10710	11305	13090	14280	15470	16660	19040	5-95
8344	8940	9536	10132	10728	11324	13112	14304	15496	16688	19072	5-96
8358	8955	9552	10149	10746	11343	13134	14328	15522	16716	19104	5-97
8372	8970	9568	10166	10764	11362	13156	14352	15548	16744	19136	5-98
8386	8985	9584	10183	10782	11381	13178	14376	15574	16772	19168	5-99
8400	9000	9600	10200	10800	11400	13200	14400	15600	16800	19200	5-60

TABLE 1.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
6'01	1202	1803	2404	3005	3606	4207	4808	5409	6611	7212	7813	
6'02	1204	1806	2408	3010	3612	4214	4816	5418	6622	7224	7826	
6'03	1206	1809	2412	3015	3618	4221	4824	5427	6633	7236	7839	
6'04	1208	1812	2416	3020	3624	4228	4832	5436	6644	7248	7852	
6'05	1210	1816	2420	3025	3630	4235	4840	5445	6655	7260	7865	
6'06	1212	1818	2424	3030	3636	4242	4848	5454	6666	7272	7878	
6'07	1214	1821	2428	3035	3642	4249	4856	5463	6677	7284	7891	
6'08	1216	1824	2432	3040	3648	4256	4864	5472	6688	7296	7904	
6'09	1218	1827	2436	3045	3654	4263	4872	5481	6699	7308	7917	
6'10	1220	1830	2440	3050	3660	4270	4880	5490	6710	7320	7930	
6'11	1222	1833	2444	3055	3666	4277	4888	5499	6721	7332	7943	
6'12	1224	1836	2448	3060	3672	4284	4896	5508	6732	7344	7956	
6'13	1226	1839	2452	3065	3678	4291	4904	5517	6743	7356	7969	
6'14	1228	1842	2456	3070	3684	4298	4912	5526	6754	7368	7982	
6'15	1230	1846	2460	3075	3690	4305	4920	5535	6765	7380	7995	
6'16	1232	1848	2464	3080	3696	4312	4928	5544	6776	7392	8008	
6'17	1234	1851	2468	3086	3702	4319	4936	5553	6787	7404	8021	
6'18	1236	1854	2472	3090	3708	4326	4944	5562	6798	7416	8034	
6'19	1238	1857	2476	3095	3714	4333	4952	5571	6809	7428	8047	
6'20	1240	1860	2480	3100	3720	4340	4960	5580	6820	7440	8060	
6'21	1242	1863	2484	3105	3726	4347	4968	5589	6831	7452	8073	
6'22	1244	1866	2488	3110	3732	4354	4976	5598	6842	7464	8086	
6'23	1246	1869	2492	3115	3738	4361	4984	5607	6853	7476	8099	
6'24	1248	1872	2496	3120	3744	4368	4992	5616	6864	7488	8112	
6'25	1250	1876	2500	3125	3750	4375	5000	5625	6875	7500	8125	
6'26	1252	1878	2504	3130	3756	4382	5008	5634	6886	7512	8138	
6'27	1254	1881	2508	3135	3762	4389	5016	5643	6897	7524	8151	
6'28	1256	1884	2512	3140	3768	4396	5024	5652	6908	7536	8164	
6'29	1258	1887	2516	3145	3774	4403	5032	5661	6919	7548	8177	
6'30	1260	1890	2520	3150	3780	4410	5040	5670	6930	7560	8190	
6'31	1262	1893	2524	3155	3786	4417	5048	5679	6941	7572	8203	
6'32	1264	1896	2528	3160	3792	4424	5056	5688	6952	7584	8216	
6'33	1266	1899	2532	3165	3798	4431	5064	5697	6963	7596	8229	
6'34	1268	1902	2536	3170	3804	4438	5072	5706	6974	7608	8242	
6'35	1270	1905	2540	3175	3810	4445	5080	5715	6985	7620	8255	
6'36	1272	1908	2544	3180	3816	4452	5088	5724	6996	7632	8268	
6'37	1274	1911	2548	3185	3822	4459	5096	5733	7007	7644	8281	
6'38	1276	1914	2552	3190	3828	4466	5104	5742	7018	7656	8294	
6'39	1278	1917	2556	3195	3834	4473	5112	5751	7029	7668	8307	
6'40	1280	1920	2560	3200	3840	4480	5120	5760	7040	7680	8320	
6'41	1282	1923	2564	3205	3846	4487	5128	5769	7051	7692	8333	
6'42	1284	1926	2568	3210	3852	4494	5136	5778	7062	7704	8346	
6'43	1286	1929	2572	3215	3858	4501	5144	5787	7073	7716	8359	
6'44	1288	1932	2576	3220	3864	4508	5152	5796	7084	7728	8372	
6'45	1290	1935	2580	3225	3870	4515	5160	5805	7095	7740	8385	
6'46	1292	1938	2584	3230	3876	4522	5168	5814	7106	7752	8398	
6'47	1294	1941	2588	3235	3882	4529	5176	5823	7117	7764	8411	
6'48	1296	1944	2592	3240	3888	4536	5184	5832	7128	7776	8424	
6'49	1298	1947	2596	3245	3894	4543	5192	5841	7139	7788	8437	
6'50	1300	1950	2600	3250	3900	4550	5200	5850	7150	7800	8450	

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
8414	9015	9616	10217	10818	11419	12022	14424	15626	16828	19232	6'01
8428	9030	9632	10234	10836	11438	12044	14448	15652	16856	19264	6'02
8442	9045	9648	10251	10854	11457	12058	14472	15678	16884	19296	6'03
8456	9060	9664	10268	10872	11476	12088	14496	15704	16912	19328	6'04
8470	9075	9680	10285	10890	11495	12110	14520	15730	16940	19360	6'05
8484	9090	9696	10302	10908	11514	12132	14544	15756	16968	19392	6'06
8498	9105	9712	10319	10926	11538	12154	14568	15782	16996	19424	6'07
8512	9120	9728	10336	10944	11562	12176	14592	15808	17024	19456	6'08
8526	9135	9744	10353	10962	11587	12198	14616	15834	17052	19488	6'09
8540	9150	9760	10370	10980	11590	12420	14640	15860	17080	19520	6'10
8554	9165	9776	10387	10998	11609	12442	14664	15886	17108	19552	6'11
8568	9180	9792	10404	11016	11628	12464	14688	15912	17136	19584	6'12
8582	9195	9808	10421	11034	11647	12486	14712	15938	17164	19616	6'13
8596	9210	9824	10438	11052	11666	12508	14736	15964	17192	19648	6'14
8610	9225	9840	10455	11070	11685	12530	14760	15990	17220	19680	6'15
8624	9240	9856	10472	11088	11704	12552	14784	16016	17248	19712	6'16
8638	9255	9872	10489	11106	11723	12574	14808	16042	17276	19744	6'17
8652	9270	9888	10506	11124	11742	12596	14832	16068	17304	19776	6'18
8666	9285	9904	10523	11142	11761	12618	14856	16094	17332	19808	6'19
8680	9300	9920	10540	11160	11780	12640	14880	16120	17360	19840	6'20
8694	9315	9936	10557	11178	11799	12662	14904	16146	17388	19872	6'21
8708	9330	9952	10574	11196	11818	12684	14928	16172	17416	19904	6'22
8722	9345	9968	10591	11214	11837	12706	14952	16198	17444	19936	6'23
8736	9360	9984	10608	11232	11856	12728	14976	16224	17472	19968	6'24
8750	9375	10000	10625	11250	11875	12750	15000	16250	17500	20000	6'25
8764	9390	10016	10642	11268	11894	12772	15024	16276	17528	20032	6'26
8778	9405	10032	10659	11286	11913	12794	15048	16302	17556	20064	6'27
8792	9420	10048	10676	11304	11932	12816	15072	16328	17584	20096	6'28
8806	9435	10064	10693	11322	11951	12838	15096	16354	17612	20128	6'29
8820	9450	10080	10710	11340	11970	12860	15120	16380	17640	20160	6'30
8834	9465	10096	10727	11358	11989	12882	15144	16406	17668	20192	6'31
8848	9480	10112	10744	11376	12008	12904	15168	16432	17696	20224	6'32
8862	9495	10128	10761	11394	12027	12926	15192	16458	17724	20256	6'33
8876	9510	10144	10778	11412	12046	12948	15216	16484	17752	20288	6'34
8890	9525	10160	10795	11430	12065	12970	15240	16510	17780	20320	6'35
8904	9540	10176	10812	11448	12084	12992	15264	16536	17808	20352	6'36
8918	9555	10192	10829	11466	12103	13014	15288	16562	17836	20384	6'37
8932	9570	10208	10846	11484	12122	13036	15312	16588	17864	20416	6'38
8946	9585	10224	10863	11502	12141	13058	15336	16614	17892	20448	6'39
8960	9600	10240	10880	11520	12160	13080	15360	16640	17920	20480	6'40
8974	9615	10256	10897	11538	12179	13102	15384	16666	17948	20512	6'41
8988	9630	10272	10914	11556	12198	13124	15408	16692	17976	20544	6'42
9002	9645	10288	10931	11574	12217	13146	15432	16718	18004	20576	6'43
9016	9660	10304	10948	11592	12236	13168	15456	16744	18032	20608	6'44
9030	9675	10320	10965	11610	12255	13190	15480	16770	18060	20640	6'45
9044	9690	10336	10982	11628	12274	13212	15504	16796	18088	20672	6'46
9058	9705	10352	10999	11646	12293	13234	15528	16822	18116	20704	6'47
9072	9720	10368	11016	11664	12312	13256	15552	16848	18144	20736	6'48
9086	9735	10384	11033	11682	12331	13278	15576	16874	18172	20768	6'49
9100	9750	10400	11050	11700	12350	13300	15600	16900	18200	20800	6'50

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth, in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
6'51	1302	1953	2604	3255	3906	4557	5208	5859	7161	7812	8463	
6'52	1304	1956	2608	3260	3912	4564	5216	5868	7172	7824	8476	
6'53	1306	1959	2612	3265	3918	4571	5224	5877	7183	7836	8489	
6'54	1308	1962	2616	3270	3924	4578	5232	5886	7194	7848	8502	
6'55	1310	1965	2620	3275	3930	4585	5240	5895	7205	7860	8515	
6'56	1312	1968	2624	3280	3936	4592	5248	5904	7216	7872	8528	
6'57	1314	1971	2628	3285	3942	4599	5256	5913	7227	7884	8541	
6'58	1316	1974	2632	3290	3948	4606	5264	5922	7238	7896	8554	
6'59	1318	1977	2636	3295	3954	4613	5272	5931	7249	7908	8567	
6'60	1320	1980	2640	3300	3960	4620	5280	5940	7260	7920	8580	
6'61	1322	1983	2644	3305	3966	4627	5288	5949	7271	7932	8593	
6'62	1324	1986	2648	3310	3972	4634	5296	5958	7282	7944	8606	
6'63	1326	1989	2652	3315	3978	4641	5304	5967	7293	7956	8619	
6'64	1328	1992	2656	3320	3984	4648	5312	5976	7304	7968	8632	
6'65	1330	1995	2660	3325	3990	4655	5320	5985	7315	7980	8645	
6'66	1332	1998	2664	3330	3996	4662	5328	5994	7326	7992	8658	
6'67	1334	2001	2668	3335	4002	4669	5336	6003	7337	8004	8671	
6'68	1336	2004	2672	3340	4008	4676	5344	6012	7348	8016	8684	
6'69	1338	2007	2676	3345	4014	4683	5352	6021	7359	8028	8697	
6'70	1340	2010	2680	3350	4020	4690	5360	6030	7370	8040	8710	
6'71	1342	2013	2684	3355	4026	4697	5368	6039	7381	8052	8723	
6'72	1344	2016	2688	3360	4032	4704	5376	6048	7392	8064	8736	
6'73	1346	2019	2692	3365	4038	4711	5384	6057	7403	8076	8749	
6'74	1348	2022	2696	3370	4044	4718	5392	6066	7414	8088	8762	
6'75	1350	2025	2700	3375	4050	4725	5400	6075	7425	8100	8775	
6'76	1352	2028	2704	3380	4056	4732	5408	6084	7436	8112	8788	
6'77	1354	2031	2708	3385	4062	4739	5416	6093	7447	8124	8801	
6'78	1356	2034	2712	3390	4068	4746	5424	6102	7458	8136	8814	
6'79	1358	2037	2716	3395	4074	4753	5432	6111	7469	8148	8827	
6'80	1360	2040	2720	3400	4080	4760	5440	6120	7480	8160	8840	
6'81	1362	2043	2724	3405	4086	4767	5448	6129	7491	8172	8853	
6'82	1364	2046	2728	3410	4092	4774	5456	6138	7502	8184	8866	
6'83	1366	2049	2732	3415	4098	4781	5464	6147	7513	8196	8879	
6'84	1368	2052	2736	3420	4104	4788	5472	6156	7524	8208	8892	
6'85	1370	2055	2740	3425	4110	4795	5480	6165	7535	8220	8905	
6'86	1372	2058	2744	3430	4116	4802	5488	6174	7546	8232	8918	
6'87	1374	2061	2748	3435	4122	4809	5496	6183	7557	8244	8931	
6'88	1376	2064	2752	3440	4128	4816	5504	6192	7568	8256	8944	
6'89	1378	2067	2756	3445	4134	4823	5512	6201	7579	8268	8957	
6'90	1380	2070	2760	3450	4140	4830	5520	6210	7590	8280	8970	
6'91	1382	2073	2764	3455	4146	4837	5528	6219	7601	8292	8983	
6'92	1384	2076	2768	3460	4152	4844	5536	6228	7612	8304	8996	
6'93	1386	2079	2772	3465	4158	4851	5544	6237	7623	8316	9009	
6'94	1388	2082	2776	3470	4164	4858	5552	6246	7634	8328	9022	
6'95	1390	2085	2780	3475	4170	4865	5560	6255	7645	8340	9035	
6'96	1392	2088	2784	3480	4176	4872	5568	6264	7656	8352	9048	
6'97	1394	2091	2788	3485	4182	4879	5576	6273	7667	8364	9061	
6'98	1396	2094	2792	3490	4188	4886	5584	6282	7678	8376	9074	
6'99	1398	2097	2796	3495	4194	4893	5592	6291	7689	8388	9087	
7'00	1400	2100	2800	3500	4200	4900	5600	6300	7700	8400	9100	

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

ON WIDTH OF BASE OF CUTTING IN FEET.											Depth in Feet.
14	15	16	17	18	19	22	24	26	28	32	
9114	9765	10416	11067	11718	12369	13020	13671	14322	14973	20833	6:51
9128	9780	10432	11084	11736	12388	13039	13690	14341	14992	20854	6:52
9142	9795	10448	11101	11754	12407	13058	13709	14360	15011	20875	6:53
9156	9810	10464	11118	11772	12426	13078	13729	14380	15031	20895	6:54
9170	9825	10480	11135	11790	12445	13098	13749	14400	15051	20916	6:55
9184	9840	10496	11152	11808	12464	13118	13769	14420	15071	20937	6:56
9198	9855	10512	11169	11826	12483	13138	13789	14440	15091	20957	6:57
9212	9870	10528	11186	11844	12502	13158	13809	14460	15111	20978	6:58
9226	9885	10544	11203	11862	12521	13178	13829	14480	15131	20998	6:59
9240	9900	10560	11220	11880	12540	13198	13849	14500	15151	21019	7:00
9254	9915	10576	11237	11896	12559	13218	13869	14520	15171	21040	6:61
9268	9930	10592	11254	11916	12578	13238	13889	14540	15191	21060	6:62
9282	9945	10608	11271	11934	12597	13258	13909	14560	15211	21081	6:63
9296	9960	10624	11288	11952	12616	13278	13929	14580	15231	21101	6:64
9310	9975	10640	11305	11970	12635	13298	13949	14600	15251	21122	6:65
9324	9990	10656	11322	11988	12654	13318	13969	14620	15271	21142	6:66
9338	10005	10672	11339	12006	12673	13338	13989	14640	15291	21163	6:67
9352	10020	10688	11356	12024	12692	13358	14009	14660	15311	21183	6:68
9366	10035	10704	11373	12042	12711	13378	14029	14680	15331	21204	6:69
9380	10050	10720	11390	12060	12730	13398	14049	14700	15351	21224	6:70
9394	10065	10736	11407	12078	12749	13418	14069	14720	15371	21245	6:71
9408	10080	10752	11424	12096	12768	13438	14089	14740	15391	21265	6:72
9422	10095	10768	11441	12114	12787	13458	14109	14760	15411	21286	6:73
9436	10110	10784	11458	12132	12806	13478	14129	14780	15431	21306	6:74
9450	10125	10800	11475	12150	12825	13498	14149	14800	15451	21327	6:75
9464	10140	10816	11492	12168	12844	13518	14169	14820	15471	21347	6:76
9478	10155	10832	11509	12186	12863	13538	14189	14840	15491	21368	6:77
9492	10170	10848	11526	12204	12882	13558	14209	14860	15511	21388	6:78
9506	10185	10864	11543	12222	12901	13578	14229	14880	15531	21409	6:79
9520	10200	10880	11560	12240	12920	13598	14249	14900	15551	21429	6:80
9534	10215	10896	11577	12258	12939	13618	14269	14920	15571	21450	6:81
9548	10230	10912	11594	12276	12958	13638	14289	14940	15591	21470	6:82
9562	10245	10928	11611	12294	12977	13658	14309	14960	15611	21491	6:83
9576	10260	10944	11628	12312	12996	13678	14329	14980	15631	21511	6:84
9590	10275	10960	11645	12330	13015	13698	14349	15000	15651	21532	6:85
9604	10290	10976	11662	12348	13034	13718	14369	15020	15671	21552	6:86
9618	10305	10992	11679	12366	13053	13738	14389	15040	15691	21573	6:87
9632	10320	11008	11696	12384	13072	13758	14409	15060	15711	21593	6:88
9646	10335	11024	11713	12402	13091	13778	14429	15080	15731	21614	6:89
9660	10350	11040	11730	12420	13110	13798	14449	15100	15751	21634	6:90
9674	10365	11056	11747	12438	13129	13818	14469	15120	15771	21655	6:91
9688	10380	11072	11764	12456	13148	13838	14489	15140	15791	21675	6:92
9702	10395	11088	11781	12474	13167	13858	14509	15160	15811	21696	6:93
9716	10410	11104	11798	12492	13186	13878	14529	15180	15831	21716	6:94
9730	10425	11120	11815	12510	13205	13898	14549	15200	15851	21737	6:95
9744	10440	11136	11832	12528	13224	13918	14569	15220	15871	21757	6:96
9758	10455	11152	11849	12546	13243	13938	14589	15240	15891	21778	6:97
9772	10470	11168	11866	12564	13262	13958	14609	15260	15911	21798	6:98
9786	10485	11184	11883	12582	13281	13978	14629	15280	15931	21819	6:99
9800	10500	11200	11900	12600	13300	14000	14649	15300	15951	21839	7:00

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
7'01	1402	2103	2804	3505	4206	4907	5608	6309	7711	8412	9113	
7'02	1404	2106	2808	3510	4212	4914	5616	6318	7722	8424	9126	
7'03	1406	2109	2812	3515	4218	4921	5624	6327	7728	8436	9139	
7'04	1408	2112	2816	3520	4224	4928	5632	6336	7744	8448	9152	
7'05	1410	2115	2820	3525	4230	4935	5640	6345	7755	8460	9165	
7'06	1412	2118	2824	3530	4236	4942	5648	6354	7766	8472	9178	
7'07	1414	2121	2828	3535	4242	4949	5656	6363	7777	8484	9191	
7'08	1416	2124	2832	3540	4248	4956	5664	6372	7788	8496	9204	
7'09	1418	2127	2836	3545	4254	4963	5672	6381	7799	8508	9217	
7'10	1420	2130	2840	3550	4260	4970	5680	6390	7810	8520	9230	
7'11	1422	2133	2844	3555	4266	4977	5688	6399	7821	8532	9243	
7'12	1424	2136	2848	3560	4272	4984	5696	6408	7832	8544	9256	
7'13	1426	2139	2852	3565	4278	4991	5704	6417	7843	8556	9269	
7'14	1428	2142	2856	3570	4284	4998	5712	6426	7854	8568	9282	
7'15	1430	2145	2860	3575	4290	5005	5720	6435	7865	8580	9295	
7'16	1432	2148	2864	3580	4296	5012	5728	6444	7876	8592	9308	
7'17	1434	2151	2868	3585	4302	5019	5736	6453	7887	8604	9321	
7'18	1436	2154	2872	3590	4308	5026	5744	6462	7898	8616	9334	
7'19	1438	2157	2876	3595	4314	5033	5752	6471	7909	8628	9347	
7'20	1440	2160	2880	3600	4320	5040	5760	6480	7920	8640	9360	
7'21	1442	2163	2884	3605	4326	5047	5768	6489	7931	8652	9373	
7'22	1444	2166	2888	3610	4332	5054	5776	6498	7942	8664	9386	
7'23	1446	2169	2892	3615	4338	5061	5784	6507	7953	8676	9399	
7'24	1448	2172	2896	3620	4344	5068	5792	6516	7964	8688	9412	
7'25	1450	2175	2900	3625	4350	5075	5800	6525	7975	8700	9425	
7'26	1452	2178	2904	3630	4356	5082	5808	6534	7986	8712	9438	
7'27	1454	2181	2908	3635	4362	5089	5816	6543	7997	8724	9451	
7'28	1456	2184	2912	3640	4368	5096	5824	6552	8008	8736	9464	
7'29	1458	2187	2916	3645	4374	5103	5832	6561	8019	8748	9477	
7'30	1460	2190	2920	3650	4380	5110	5840	6570	8030	8760	9490	
7'31	1463	2193	2924	3655	4386	5117	5848	6579	8041	8772	9503	
7'32	1464	2196	2928	3660	4392	5124	5856	6588	8052	8784	9516	
7'33	1466	2199	2932	3665	4398	5131	5864	6597	8063	8796	9529	
7'34	1468	2202	2936	3670	4404	5138	5872	6606	8074	8808	9542	
7'35	1470	2205	2940	3675	4410	5145	5880	6615	8085	8820	9555	
7'36	1472	2208	2944	3680	4416	5152	5888	6624	8096	8832	9568	
7'37	1474	2211	2948	3685	4422	5159	5896	6633	8107	8844	9581	
7'38	1476	2214	2952	3690	4428	5166	5904	6642	8118	8856	9594	
7'39	1478	2217	2956	3695	4434	5173	5912	6651	8129	8868	9607	
7'40	1480	2220	2960	3700	4440	5180	5920	6660	8140	8880	9620	
7'41	1483	2223	2964	3705	4446	5187	5928	6669	8151	8892	9633	
7'42	1484	2226	2968	3710	4452	5194	5936	6678	8162	8904	9646	
7'43	1486	2229	2972	3715	4458	5201	5944	6687	8173	8916	9659	
7'44	1488	2232	2976	3720	4464	5208	5952	6696	8184	8928	9672	
7'45	1490	2235	2980	3725	4470	5215	5960	6705	8195	8940	9685	
7'46	1492	2238	2984	3730	4476	5222	5968	6714	8206	8952	9698	
7'47	1494	2241	2988	3735	4482	5229	5976	6723	8217	8964	9711	
7'48	1496	2244	2992	3740	4488	5236	5984	6732	8228	8976	9724	
7'49	1498	2247	2996	3745	4494	5243	5992	6741	8239	8988	9737	
7'50	1500	2250	3000	3750	4500	5250	6000	6750	8250	9000	9750	

Portions of Lengths of 100 Feet. For Areas Insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	31	Depth in Feet.
9814	10515	11216	11917	12618	13319	15422	16824	18226	19628	23432	7.01
9828	10530	11232	11934	12636	13338	15444	16848	18252	19656	23464	7.02
9842	10545	11248	11951	12654	13357	15466	16872	18278	19684	23496	7.03
9856	10560	11264	11968	12672	13376	15488	16896	18304	19712	23528	7.04
9870	10575	11280	11985	12690	13395	15510	16920	18336	19740	23560	7.05
9884	10590	11296	12002	12708	13414	15532	16944	18368	19768	23592	7.06
9898	10605	11312	12019	12726	13433	15554	16968	18392	19796	23624	7.07
9912	10620	11328	12036	12744	13452	15576	16992	18408	19824	23656	7.08
9926	10635	11344	12053	12762	13471	15598	17016	18484	19852	23688	7.09
9940	10650	11360	12070	12780	13490	15620	17040	18480	19880	23720	7.10
9954	10665	11376	12087	12798	13509	15642	17064	18486	19908	23752	7.11
9968	10680	11392	12104	12816	13528	15664	17088	18512	19936	23784	7.12
9982	10695	11408	12121	12834	13547	15686	17112	18538	19964	23816	7.13
9996	10710	11424	12138	12852	13566	15708	17136	18564	19992	23848	7.14
10010	10725	11440	12155	12870	13585	15730	17160	18590	20020	23880	7.15
10024	10740	11456	12172	12888	13604	15752	17184	18616	20048	23912	7.16
10038	10755	11472	12189	12906	13623	15774	17208	18642	20076	23944	7.17
10052	10770	11488	12206	12924	13642	15796	17232	18668	20104	23976	7.18
10066	10785	11504	12223	12942	13661	15818	17256	18694	20132	24008	7.19
10080	10800	11520	12240	12960	13680	15840	17280	18720	20160	24040	7.20
10094	10815	11536	12257	12978	13699	15862	17304	18746	20188	24072	7.21
10108	10830	11552	12274	12996	13718	15884	17328	18772	20216	24104	7.22
10122	10845	11568	12291	13014	13737	15906	17352	18798	20244	24136	7.23
10136	10860	11584	12308	13032	13756	15928	17376	18824	20272	24168	7.24
10150	10875	11600	12325	13050	13775	15950	17400	18850	20300	24200	7.25
10164	10890	11616	12342	13068	13794	15972	17424	18876	20328	24232	7.26
10178	10905	11632	12359	13086	13813	15994	17448	18902	20356	24264	7.27
10192	10920	11648	12376	13104	13832	16016	17472	18928	20384	24296	7.28
10206	10935	11664	12393	13122	13851	16038	17496	18954	20412	24328	7.29
10220	10950	11680	12410	13140	13870	16060	17520	18980	20440	24360	7.30
10234	10965	11696	12427	13158	13889	16082	17544	19006	20468	24392	7.31
10248	10980	11712	12444	13176	13908	16104	17568	19032	20496	24424	7.32
10262	10995	11728	12461	13194	13927	16126	17592	19058	20524	24456	7.33
10276	11010	11744	12478	13212	13946	16148	17616	19084	20552	24488	7.34
10290	11025	11760	12495	13230	13965	16170	17640	19110	20580	24520	7.35
10304	11040	11776	12512	13248	13984	16192	17664	19136	20608	24552	7.36
10318	11055	11792	12529	13266	14003	16214	17688	19162	20636	24584	7.37
10332	11070	11808	12546	13284	14022	16236	17712	19188	20664	24616	7.38
10346	11085	11824	12563	13302	14041	16258	17736	19214	20692	24648	7.39
10360	11100	11840	12580	13320	14060	16280	17760	19240	20720	24680	7.40
10374	11115	11856	12597	13338	14079	16302	17784	19266	20748	24712	7.41
10388	11130	11872	12614	13356	14098	16324	17808	19292	20776	24744	7.42
10402	11145	11888	12631	13374	14117	16346	17832	19318	20804	24776	7.43
10416	11160	11904	12648	13392	14136	16368	17856	19344	20832	24808	7.44
10430	11175	11920	12665	13410	14155	16390	17880	19370	20860	24840	7.45
10444	11190	11936	12682	13428	14174	16412	17904	19396	20888	24872	7.46
10458	11205	11952	12699	13446	14193	16434	17928	19422	20916	24904	7.47
10472	11220	11968	12716	13464	14212	16456	17952	19448	20944	24936	7.48
10486	11235	11984	12733	13482	14231	16478	17976	19474	20972	24968	7.49
10500	11250	12000	12750	13500	14250	16500	18000	19500	21000	25000	7.50

TABLE 1.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
751	1802	2253	3004	3755	4506	5257	6008	6759	8261	9012	9763	
752	1804	2256	3008	3760	4512	5264	6016	6768	8272	9024	9776	
753	1806	2259	3012	3765	4518	5271	6024	6777	8283	9036	9789	
754	1808	2262	3016	3770	4524	5278	6032	6786	8294	9048	9802	
755	1810	2265	3020	3775	4530	5285	6040	6795	8305	9060	9815	
756	1812	2268	3024	3780	4536	5292	6048	6804	8316	9072	9828	
757	1814	2271	3028	3785	4542	5299	6056	6813	8327	9084	9841	
758	1816	2274	3032	3790	4548	5306	6064	6822	8338	9096	9854	
759	1818	2277	3036	3795	4554	5313	6072	6831	8349	9108	9867	
760	1820	2280	3040	3800	4560	5320	6080	6840	8360	9120	9880	
761	1822	2283	3044	3805	4566	5327	6088	6849	8371	9132	9893	
762	1824	2286	3048	3810	4572	5334	6096	6858	8382	9144	9906	
763	1826	2289	3052	3815	4578	5341	6104	6867	8393	9156	9919	
764	1828	2292	3056	3820	4584	5348	6112	6876	8404	9168	9932	
765	1830	2295	3060	3825	4590	5355	6120	6885	8415	9180	9945	
766	1832	2298	3064	3830	4596	5362	6128	6894	8426	9192	9958	
767	1834	2301	3068	3835	4602	5369	6136	6905	8437	9204	9971	
768	1836	2304	3072	3840	4608	5376	6144	6912	8448	9216	9984	
769	1838	2307	3076	3845	4614	5383	6152	6921	8459	9228	9997	
770	1840	2310	3080	3850	4620	5390	6160	6930	8470	9240	10010	
771	1842	2313	3084	3855	4626	5397	6168	6939	8481	9252	10023	
772	1844	2316	3088	3860	4632	5404	6176	6948	8492	9264	10036	
773	1846	2319	3092	3865	4638	5411	6184	6957	8503	9276	10049	
774	1848	2322	3096	3870	4644	5418	6192	6966	8514	9288	10062	
775	1850	2325	3100	3875	4650	5425	6200	6975	8526	9300	10075	
776	1852	2328	3104	3880	4656	5432	6208	6984	8536	9312	10088	
777	1854	2331	3108	3885	4662	5439	6216	6993	8547	9324	10101	
778	1856	2334	3112	3890	4668	5446	6224	7002	8558	9336	10114	
779	1858	2337	3116	3895	4674	5453	6232	7011	8569	9348	10127	
780	1860	2340	3120	3900	4680	5460	6240	7020	8580	9360	10140	
781	1862	2343	3124	3905	4686	5467	6248	7029	8591	9372	10153	
782	1864	2346	3128	3910	4692	5474	6256	7038	8602	9384	10166	
783	1866	2349	3132	3915	4698	5481	6264	7047	8613	9396	10179	
784	1868	2352	3136	3920	4704	5488	6272	7056	8624	9408	10192	
785	1870	2355	3140	3925	4710	5495	6280	7065	8635	9420	10205	
786	1872	2358	3144	3930	4716	5502	6288	7074	8646	9432	10218	
787	1874	2361	3148	3935	4722	5509	6296	7083	8657	9444	10231	
788	1876	2364	3152	3940	4728	5516	6304	7092	8668	9456	10244	
789	1878	2367	3156	3945	4734	5523	6312	7101	8679	9468	10257	
790	1880	2370	3160	3950	4740	5530	6320	7110	8690	9480	10270	
791	1882	2373	3164	3955	4746	5537	6328	7119	8701	9492	10283	
792	1884	2376	3168	3960	4752	5544	6336	7128	8712	9504	10296	
793	1886	2379	3172	3965	4758	5551	6344	7137	8723	9516	10309	
794	1888	2382	3176	3970	4764	5558	6352	7146	8734	9528	10322	
795	1890	2385	3180	3975	4770	5565	6360	7155	8745	9540	10335	
796	1892	2388	3184	3980	4776	5572	6368	7164	8756	9552	10348	
797	1894	2391	3188	3985	4782	5579	6376	7173	8767	9564	10361	
798	1896	2394	3192	3990	4788	5586	6384	7182	8778	9576	10374	
799	1898	2397	3196	3995	4794	5593	6392	7191	8789	9588	10387	
800	1900	2400	3200	4000	4800	5600	6400	7200	8800	9600	10400	

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.											Depth in Feet.
14	15	16	17	18	19	22	24	28	28	32	
10514	11265	12016	12767	13518	14269	15020	15771	16522	17273	18024	7:51
10528	11280	12032	12784	13536	14288	15040	15792	16544	17296	18048	7:52
10542	11295	12048	12801	13554	14307	15060	15813	16566	17319	18072	7:53
10556	11310	12064	12818	13572	14326	15080	15834	16588	17342	18096	7:54
10570	11325	12080	12836	13590	14345	15100	15855	16610	17365	18120	7:55
10584	11340	12096	12852	13608	14364	15120	15874	16630	17384	18140	7:56
10598	11355	12112	12869	13626	14383	15140	15894	16650	17404	18160	7:57
10612	11370	12128	12886	13644	14402	15160	15914	16670	17424	18180	7:58
10626	11385	12144	12903	13662	14421	15180	15934	16690	17444	18200	7:59
10640	11400	12160	12920	13680	14440	15200	15954	16710	17464	18220	7:60
10654	11415	12176	12937	13698	14459	15220	15974	16730	17484	18240	7:61
10668	11430	12192	12954	13716	14478	15240	15994	16750	17504	18260	7:62
10682	11445	12208	12971	13734	14497	15260	16014	16770	17524	18280	7:63
10696	11460	12224	12988	13752	14516	15280	16034	16790	17544	18300	7:64
10710	11475	12240	13005	13770	14535	15300	16054	16810	17564	18320	7:65
10724	11490	12256	13022	13788	14554	15320	16074	16830	17584	18340	7:66
10738	11505	12272	13039	13806	14573	15340	16094	16850	17604	18360	7:67
10752	11520	12288	13056	13824	14592	15360	16114	16870	17624	18380	7:68
10766	11535	12304	13073	13842	14611	15380	16134	16890	17644	18400	7:69
10780	11550	12320	13090	13860	14630	15400	16154	16910	17664	18420	7:70
10794	11565	12336	13107	13878	14649	15420	16174	16930	17684	18440	7:71
10808	11580	12352	13124	13896	14668	15440	16194	16950	17704	18460	7:72
10822	11595	12368	13141	13914	14687	15460	16214	16970	17724	18480	7:73
10836	11610	12384	13158	13932	14706	15480	16234	16990	17744	18500	7:74
10850	11625	12400	13175	13950	14725	15500	16254	17010	17764	18520	7:75
10864	11640	12416	13192	13968	14744	15520	16274	17030	17784	18540	7:76
10878	11655	12432	13209	13986	14763	15540	16294	17050	17804	18560	7:77
10892	11670	12448	13226	14004	14782	15560	16314	17070	17824	18580	7:78
10906	11685	12464	13243	14022	14801	15580	16334	17090	17844	18600	7:79
10920	11700	12480	13260	14040	14820	15600	16354	17110	17864	18620	7:80
10934	11715	12496	13277	14058	14839	15620	16374	17130	17884	18640	7:81
10948	11730	12512	13294	14076	14858	15640	16394	17150	17904	18660	7:82
10962	11745	12528	13311	14094	14877	15660	16414	17170	17924	18680	7:83
10976	11760	12544	13328	14112	14896	15680	16434	17190	17944	18700	7:84
10990	11775	12560	13345	14130	14915	15700	16454	17210	17964	18720	7:85
11004	11790	12576	13362	14148	14934	15720	16474	17230	17984	18740	7:86
11018	11805	12592	13379	14166	14953	15740	16494	17250	18004	18760	7:87
11032	11820	12608	13396	14184	14972	15760	16514	17270	18024	18780	7:88
11046	11835	12624	13413	14202	14991	15780	16534	17290	18044	18800	7:89
11060	11850	12640	13430	14220	15010	15800	16554	17310	18064	18820	7:90
11074	11865	12656	13447	14238	15029	15820	16574	17330	18084	18840	7:91
11088	11880	12672	13464	14256	15048	15840	16594	17350	18104	18860	7:92
11102	11895	12688	13481	14274	15067	15860	16614	17370	18124	18880	7:93
11116	11910	12704	13498	14292	15086	15880	16634	17390	18144	18900	7:94
11130	11925	12720	13515	14310	15105	15900	16654	17410	18164	18920	7:95
11144	11940	12736	13532	14328	15124	15920	16674	17430	18184	18940	7:96
11158	11955	12752	13549	14346	15143	15940	16694	17450	18204	18960	7:97
11172	11970	12768	13566	14364	15162	15960	16714	17470	18224	18980	7:98
11186	11985	12784	13583	14382	15181	15980	16734	17490	18244	19000	7:99
11200	12000	12800	13600	14400	15200	16000	16754	17510	18264	19020	8:00

TABLE I.—Contents of Earthwork in Cubic Feet of Capital Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
8'01	1802	2408	3204	4005	4806	5607	6408	7209	8811	9612	10413	
8'02	1804	2406	3208	4010	4812	5614	6416	7218	8822	9624	10426	
8'03	1806	2409	3212	4015	4818	5621	6424	7227	8833	9636	10439	
8'04	1808	2412	3216	4020	4824	5628	6432	7236	8844	9648	10452	
8'05	1810	2415	3220	4025	4830	5635	6440	7245	8855	9660	10465	
8'06	1812	2418	3224	4030	4836	5642	6448	7254	8866	9672	10478	
8'07	1814	2421	3228	4035	4842	5649	6456	7268	8877	9684	10491	
8'08	1816	2424	3232	4040	4848	5656	6464	7272	8888	9696	10504	
8'09	1818	2427	3236	4045	4854	5663	6472	7281	8899	9708	10517	
8'10	1820	2430	3240	4050	4860	5670	6480	7290	8910	9720	10530	
8'11	1822	2433	3244	4055	4866	5677	6488	7299	8921	9732	10543	
8'12	1824	2436	3248	4060	4872	5684	6496	7308	8932	9744	10556	
8'13	1826	2439	3252	4065	4878	5691	6504	7317	8943	9756	10569	
8'14	1828	2442	3256	4070	4884	5698	6512	7326	8954	9768	10582	
8'15	1830	2445	3260	4076	4890	5705	6520	7335	8965	9780	10595	
8'16	1832	2448	3264	4080	4896	5712	6528	7344	8976	9792	10608	
8'17	1834	2451	3268	4085	4902	5719	6536	7353	8987	9804	10621	
8'18	1836	2454	3272	4090	4908	5726	6544	7362	8998	9816	10634	
8'19	1838	2457	3276	4095	4914	5733	6552	7371	9009	9828	10647	
8'20	1840	2460	3280	4100	4920	5740	6560	7380	9020	9840	10660	
8'21	1842	2463	3284	4105	4926	5747	6568	7389	9031	9852	10673	
8'22	1844	2466	3288	4110	4932	5754	6576	7398	9042	9864	10686	
8'23	1846	2469	3292	4115	4938	5761	6584	7407	9053	9876	10699	
8'24	1848	2472	3296	4120	4944	5768	6592	7416	9064	9888	10712	
8'25	1850	2475	3300	4125	4950	5775	6600	7425	9075	9900	10725	
8'26	1852	2478	3304	4130	4956	5782	6608	7434	9086	9912	10738	
8'27	1854	2481	3308	4135	4962	5789	6616	7443	9097	9924	10751	
8'28	1856	2484	3312	4140	4968	5796	6624	7452	9108	9936	10764	
8'29	1858	2487	3316	4145	4974	5803	6632	7461	9119	9948	10777	
8'30	1860	2490	3320	4150	4980	5810	6640	7470	9130	9960	10790	
8'31	1862	2493	3324	4155	4986	5817	6648	7479	9141	9972	10803	
8'32	1864	2496	3328	4160	4992	5824	6656	7488	9152	9984	10816	
8'33	1866	2499	3332	4165	4998	5831	6664	7497	9163	9996	10829	
8'34	1868	2502	3336	4170	5004	5838	6672	7506	9174	10008	10842	
8'35	1870	2505	3340	4175	5010	5845	6680	7515	9185	10020	10855	
8'36	1872	2508	3344	4180	5016	5852	6688	7524	9196	10032	10868	
8'37	1874	2511	3348	4185	5022	5859	6696	7533	9207	10044	10881	
8'38	1876	2514	3352	4190	5028	5866	6704	7542	9218	10056	10894	
8'39	1878	2517	3356	4195	5034	5873	6712	7551	9229	10068	10907	
8'40	1880	2520	3360	4200	5040	5880	6720	7560	9240	10080	10920	
8'41	1882	2523	3364	4205	5046	5887	6728	7569	9251	10092	10933	
8'42	1884	2526	3368	4210	5052	5894	6736	7578	9262	10104	10946	
8'43	1886	2529	3372	4215	5058	5901	6744	7587	9273	10116	10959	
8'44	1888	2532	3376	4220	5064	5908	6752	7596	9284	10128	10972	
8'45	1890	2535	3380	4225	5070	5915	6760	7605	9295	10140	10985	
8'46	1892	2538	3384	4230	5076	5922	6768	7614	9306	10152	10998	
8'47	1894	2541	3388	4235	5082	5929	6776	7623	9317	10164	11011	
8'48	1896	2544	3392	4240	5088	5936	6784	7632	9328	10176	11024	
8'49	1898	2547	3396	4245	5094	5943	6792	7641	9339	10188	11037	
8'50	1900	2550	3400	4250	5100	5950	6800	7650	9350	10200	11050	

Portions of Lengths of 100 Feet. For Areas Insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
11214	12015	12816	13617	14418	15219	17622	19224	20826	22428	26632	8'01
11225	12026	12827	13628	14429	15230	17633	19235	20837	22439	26643	8'02
11236	12037	12838	13639	14440	15241	17644	19246	20848	22450	26648	8'03
11247	12048	12849	13650	14451	15252	17655	19257	20859	22461	26653	8'04
11258	12059	12860	13661	14462	15263	17666	19268	20870	22472	26658	8'05
11269	12070	12871	13672	14473	15274	17677	19279	20881	22483	26663	8'06
11280	12081	12882	13683	14484	15285	17688	19290	20892	22494	26668	8'07
11291	12092	12893	13694	14495	15296	17699	19301	20903	22505	26673	8'08
11302	12103	12904	13705	14506	15307	17700	19312	20914	22516	26678	8'09
11313	12114	12915	13716	14517	15318	17711	19323	20925	22527	26683	8'10
11324	12125	12926	13727	14528	15329	17722	19334	20936	22538	26688	8'11
11335	12136	12937	13738	14539	15340	17733	19345	20947	22549	26693	8'12
11346	12147	12948	13749	14550	15351	17744	19356	20958	22560	26698	8'13
11357	12158	12959	13760	14561	15362	17755	19367	20969	22571	26703	8'14
11368	12169	12970	13771	14572	15373	17766	19378	20980	22582	26708	8'15
11379	12180	12981	13782	14583	15384	17777	19389	20991	22593	26713	8'16
11390	12191	12992	13793	14594	15395	17788	19400	21002	22604	26718	8'17
11401	12202	13003	13804	14605	15406	17799	19411	21013	22615	26723	8'18
11412	12213	13014	13815	14616	15417	17800	19422	21024	22626	26728	8'19
11423	12224	13025	13826	14627	15428	17811	19433	21035	22637	26733	8'20
11434	12235	13036	13837	14638	15439	17822	19444	21046	22648	26738	8'21
11445	12246	13047	13848	14649	15450	17833	19455	21057	22659	26743	8'22
11456	12257	13058	13859	14660	15461	17844	19466	21068	22670	26748	8'23
11467	12268	13069	13870	14671	15472	17855	19477	21079	22681	26753	8'24
11478	12279	13080	13881	14682	15483	17866	19488	21090	22692	26758	8'25
11489	12290	13091	13892	14693	15494	17877	19499	21101	22703	26763	8'26
11500	12301	13102	13903	14704	15505	17888	19510	21112	22714	26768	8'27
11511	12312	13113	13914	14715	15516	17899	19521	21123	22725	26773	8'28
11522	12323	13124	13925	14726	15527	17900	19532	21134	22736	26778	8'29
11533	12334	13135	13936	14737	15538	17911	19543	21145	22747	26783	8'30
11544	12345	13146	13947	14748	15549	17922	19554	21156	22758	26788	8'31
11555	12356	13157	13958	14759	15560	17933	19565	21167	22769	26793	8'32
11566	12367	13168	13969	14770	15571	17944	19576	21178	22780	26798	8'33
11577	12378	13179	13980	14781	15582	17955	19587	21189	22791	26803	8'34
11588	12389	13190	13991	14792	15593	17966	19598	21200	22802	26808	8'35
11599	12400	13201	14002	14803	15604	17977	19609	21211	22813	26813	8'36
11610	12411	13212	14013	14814	15615	17988	19620	21222	22824	26818	8'37
11621	12422	13223	14024	14825	15626	17999	19631	21233	22835	26823	8'38
11632	12433	13234	14035	14836	15637	18000	19642	21244	22846	26828	8'39
11643	12444	13245	14046	14847	15648	18011	19653	21255	22857	26833	8'40
11654	12455	13256	14057	14858	15659	18022	19664	21266	22868	26838	8'41
11665	12466	13267	14068	14869	15670	18033	19675	21277	22879	26843	8'42
11676	12477	13278	14079	14880	15681	18044	19686	21288	22890	26848	8'43
11687	12488	13289	14090	14891	15692	18055	19697	21299	22901	26853	8'44
11698	12499	13300	14101	14902	15703	18066	19708	21310	22912	26858	8'45
11709	12510	13311	14112	14913	15714	18077	19719	21321	22923	26863	8'46
11720	12521	13322	14123	14924	15725	18088	19730	21332	22934	26868	8'47
11731	12532	13333	14134	14935	15736	18099	19741	21343	22945	26873	8'48
11742	12543	13344	14145	14946	15747	18110	19752	21354	22956	26878	8'49
11753	12554	13355	14156	14957	15758	18121	19763	21365	22967	26883	8'50
11764	12565	13366	14167	14968	15769	18132	19774	21376	22978	26888	8'51
11775	12576	13377	14178	14979	15780	18143	19785	21387	22989	26893	8'52
11786	12587	13388	14189	14990	15791	18154	19796	21398	22990	26898	8'53
11797	12598	13399	14200	15001	15802	18165	19807	21409	23001	26903	8'54
11808	12609	13410	14211	15012	15813	18176	19818	21420	23012	26908	8'55
11819	12620	13421	14222	15023	15824	18187	19829	21431	23023	26913	8'56
11830	12631	13432	14233	15034	15835	18198	19840	21442	23034	26918	8'57
11841	12642	13443	14244	15045	15846	18209	19851	21453	23045	26923	8'58
11852	12653	13454	14255	15056	15857	18220	19862	21464	23056	26928	8'59
11863	12664	13465	14266	15067	15868	18231	19873	21475	23067	26933	8'60
11874	12675	13476	14277	15078	15879	18242	19884	21486	23078	26938	8'61
11885	12686	13487	14288	15089	15890	18253	19895	21497	23089	26943	8'62
11896	12697	13498	14299	15100	15901	18264	19906	21508	23100	26948	8'63
11907	12708	13509	14310	15111	15912	18275	19917	21519	23111	26953	8'64
11918	12719	13520	14321	15122	15923	18286	19928	21530	23122	26958	8'65
11929	12730	13531	14332	15133	15934	18297	19939	21541	23133	26963	8'66
11940	12741	13542	14343	15144	15945	18308	19950	21552	23144	26968	8'67
11951	12752	13553	14354	15155	15956	18319	19961	21563	23155	26973	8'68
11962	12763	13564	14365	15166	15967	18330	19972	21574	23166	26978	8'69
11973	12774	13575	14376	15177	15978	18341	19983	21585	23177	26983	8'70
11984	12785	13586	14387	15188	15989	18352	19994	21596	23188	26988	8'71
11995	12796	13597	14398	15199	15990	18363	20005	21607	23199	26993	8'72
12006	12807	13608	14409	15210	16001	18374	20016	21618	23210	26998	8'73
12017	12818	13619	14420	15221	16012	18385	20027	21629	23221	27003	8'74
12028	12829	13630	14431	15232	16023	18396	20038	21640	23232	27008	8'75
12039	12840	13641	14442	15243	16034	18407	20049	21651	23243	27013	8'76
12050	12851	13652	14453	15254	16045	18418	20060	21662	23254	27018	8'77
12061	12862	13663	14464	15265	16056	18429	20071	21673	23265	27023	8'78
12072	12873	13674	14475	15276	16067	18440	20082	21684	23276	27028	8'79
12083	12884	13685	14486	15287	16078	18451	20093	21695	23287	27033	8'80
12094	12895	13696	14497	15298	16089	18462	20104	21706	23298	27038	8'81
12105	12906	13707	14508	15309	16100	18473	20115	21717	23309	27043	8'82
12116	12917	13718	14519	15320	16111	18484	20126	21728	23320	27048	8'83
12127	12928	13729	14530	15331	16122	18495	20137	21739	23331	27053	8'84
12138	12939	13740	14541	15342	16133	18506	20148	21750	23342	27058	8'85
12149	12950	13751	14552	15353	16144	18517	20159	21761	23353	27063	8'86
12160	12961	13762	14563	15364	16155	18528	20170	21772	23364	27068	8'87
12171	12972	13773	14574	15375	16166	18539	20181	21783	23375	27073	8'88
12182	12983	13784	14585	15386	16177	18550	20192	21794	23386	27078	8'89
12193	12994	13795	14596	15397	16188	18561	20203	21805	23397	27083	8'90
12204	13005	13806	14607	15408	16199	18572	20214	21816	23408	27088	8'91
12215	13016	13817	14618	15419	16210	18583	20225	21827	23419	27093	8'92
12226	13027	13828	14629	15430	16221	18594	20236	21838	23430	27098	8'93
12237	13038	13839	14640	15441	16232	18605	20247	21849	23441	27103	8'94
12248	13049	13850	14651	15452	16243	18616	20258	21860	23452	27108	8'95
12259	13060	13861	14662	15463	16254	18627	20269	21871	23463	27113	8'96
12270	13071	13872	14673	15474	16265	18638	20280	21882	23474	27118	8'97
12281	13082	13883	14684	15485</							

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT										
	2	3	4	5	6	7	8	9	11	12	13
8'51	1702	2553	3404	4255	5106	5957	6808	7659	9561	10212	11063
8'52	1704	2556	3408	4260	5112	5964	6816	7668	9572	10224	11076
8'53	1706	2559	3412	4265	5118	5971	6824	7677	9583	10236	11089
8'54	1708	2562	3416	4270	5124	5978	6832	7686	9594	10248	11102
8'55	1710	2565	3420	4275	5130	5985	6840	7695	9606	10260	11115
8'56	1712	2568	3424	4280	5136	5992	6848	7704	9616	10272	11128
8'57	1714	2571	3428	4285	5142	5999	6856	7713	9627	10284	11141
8'58	1716	2574	3432	4290	5148	6006	6864	7723	9638	10296	11154
8'59	1718	2577	3436	4295	5154	6013	6872	7731	9649	10308	11167
8'60	1720	2580	3440	4300	5160	6020	6880	7740	9660	10320	11180
8'61	1722	2583	3444	4305	5166	6027	6888	7749	9671	10332	11193
8'62	1724	2586	3448	4310	5172	6034	6896	7758	9682	10344	11206
8'63	1726	2589	3452	4315	5178	6041	6904	7767	9693	10356	11219
8'64	1728	2592	3456	4320	5184	6048	6912	7776	9704	10368	11232
8'65	1730	2595	3460	4325	5190	6055	6920	7785	9715	10380	11245
8'66	1732	2598	3464	4330	5196	6062	6928	7794	9726	10392	11258
8'67	1734	2601	3468	4335	5202	6069	6936	7803	9737	10404	11271
8'68	1736	2604	3472	4340	5208	6076	6944	7812	9748	10416	11284
8'69	1738	2607	3476	4345	5214	6083	6952	7821	9759	10428	11297
8'70	1740	2610	3480	4350	5220	6090	6960	7830	9770	10440	11310
8'71	1742	2613	3484	4355	5226	6097	6968	7839	9781	10452	11323
8'72	1744	2616	3488	4360	5232	6104	6976	7848	9792	10464	11336
8'73	1746	2619	3492	4365	5238	6111	6984	7857	9803	10476	11349
8'74	1748	2622	3496	4370	5244	6118	6992	7866	9814	10488	11362
8'75	1750	2625	3500	4375	5250	6125	7000	7875	9825	10500	11375
8'76	1752	2628	3504	4380	5256	6132	7008	7884	9836	10512	11388
8'77	1754	2631	3508	4385	5262	6139	7016	7893	9847	10524	11401
8'78	1756	2634	3512	4390	5268	6146	7024	7902	9858	10536	11414
8'79	1758	2637	3516	4395	5274	6153	7032	7911	9869	10548	11427
8'80	1760	2640	3520	4400	5280	6160	7040	7920	9880	10560	11440
8'81	1762	2643	3524	4405	5286	6167	7048	7929	9891	10572	11453
8'82	1764	2646	3528	4410	5292	6174	7056	7938	9902	10584	11466
8'83	1766	2649	3532	4415	5298	6181	7064	7947	9913	10596	11479
8'84	1768	2652	3536	4420	5304	6188	7072	7956	9924	10608	11492
8'85	1770	2655	3540	4425	5310	6195	7080	7965	9935	10620	11505
8'86	1772	2658	3544	4430	5316	6202	7088	7974	9946	10632	11518
8'87	1774	2661	3548	4435	5322	6209	7096	7983	9957	10644	11531
8'88	1776	2664	3552	4440	5328	6216	7104	7992	9968	10656	11544
8'89	1778	2667	3556	4445	5334	6223	7112	8001	9979	10668	11557
8'90	1780	2670	3560	4450	5340	6230	7120	8010	9990	10680	11570
8'91	1782	2673	3564	4455	5346	6237	7128	8019	9801	10692	11583
8'92	1784	2676	3568	4460	5352	6244	7136	8028	9812	10704	11596
8'93	1786	2679	3572	4465	5358	6251	7144	8037	9823	10716	11609
8'94	1788	2682	3576	4470	5364	6258	7152	8046	9834	10728	11622
8'95	1790	2685	3580	4475	5370	6265	7160	8055	9845	10740	11635
8'96	1792	2688	3584	4480	5376	6272	7168	8064	9856	10752	11648
8'97	1794	2691	3588	4485	5382	6279	7176	8073	9867	10764	11661
8'98	1796	2694	3592	4490	5388	6286	7184	8082	9878	10776	11674
8'99	1798	2697	3596	4495	5394	6293	7192	8091	9889	10788	11687
8'90	1800	2700	3600	4500	5400	6300	7200	8100	9900	10800	11700

Portions of Lengths of 100 Feet. For Areas Insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
11914	12765	13616	14467	15318	16169	18722	20424	22126	23828	27332	8'51
11928	12780	13632	14484	15336	16188	18744	20448	22152	23866	27364	8'52
11942	12795	13648	14501	15354	16207	18766	20472	22178	23884	27396	8'53
11956	12810	13664	14518	15372	16226	18788	20496	22204	23912	27428	8'54
11970	12825	13680	14535	15390	16245	18810	20520	22230	23940	27460	8'55
11984	12840	13696	14552	15408	16264	18832	20544	22256	23968	27492	8'56
11998	12855	13712	14569	15426	16283	18854	20568	22282	23996	27524	8'57
12012	12870	13728	14586	15444	16302	18876	20592	22308	24024	27556	8'58
12026	12885	13744	14603	15462	16321	18898	20616	22334	24052	27588	8'59
12040	12900	13760	14620	15480	16340	18920	20640	22360	24080	27620	8'60
12054	12915	13776	14637	15498	16359	18942	20664	22386	24108	27552	8'61
12068	12930	13792	14654	15516	16378	18964	20688	22412	24136	27584	8'62
12082	12945	13808	14671	15534	16397	18986	20712	22438	24164	27616	8'63
12096	12960	13824	14688	15552	16416	19008	20736	22464	24192	27648	8'64
12110	12975	13840	14705	15570	16435	19030	20760	22490	24220	27680	8'65
12124	12990	13856	14722	15588	16454	19052	20784	22516	24248	27712	8'66
12138	13005	13872	14739	15606	16473	19074	20808	22542	24276	27744	8'67
12152	13020	13888	14756	15624	16492	19096	20832	22568	24304	27776	8'68
12166	13035	13904	14773	15642	16511	19118	20856	22594	24332	27808	8'69
12180	13050	13920	14790	15660	16530	19140	20880	22620	24360	27840	8'70
12194	13065	13936	14807	15678	16549	19162	20904	22646	24388	27872	8'71
12208	13080	13952	14824	15696	16568	19184	20928	22672	24416	27904	8'72
12222	13095	13968	14841	15714	16587	19206	20952	22698	24444	27936	8'73
12236	13110	13984	14858	15732	16606	19228	20976	22724	24472	27968	8'74
12250	13125	14000	14875	15750	16625	19250	21000	22750	24500	28000	8'75
12264	13140	14016	14892	15768	16644	19272	21024	22776	24528	28032	8'76
12278	13155	14032	14909	15786	16663	19294	21048	22802	24556	28064	8'77
12292	13170	14048	14926	15804	16682	19316	21072	22828	24584	28096	8'78
12306	13185	14064	14943	15822	16701	19338	21096	22854	24612	28128	8'79
12320	13200	14080	14960	15840	16720	19360	21120	22880	24640	28160	8'80
12334	13215	14096	14977	15858	16739	19382	21144	22906	24668	28192	8'81
12348	13230	14112	14994	15876	16758	19404	21168	22932	24696	28224	8'82
12362	13245	14128	15011	15894	16777	19426	21192	22958	24724	28256	8'83
12376	13260	14144	15028	15912	16796	19448	21216	22984	24752	28288	8'84
12390	13275	14160	15045	15930	16815	19470	21240	23010	24780	28320	8'85
12404	13290	14176	15062	15948	16834	19492	21264	23036	24808	28352	8'86
12418	13305	14192	15079	15966	16853	19514	21288	23062	24836	28384	8'87
12432	13320	14208	15096	15984	16872	19536	21312	23088	24864	28416	8'88
12446	13335	14224	15113	16002	16891	19558	21336	23114	24892	28448	8'89
12460	13350	14240	15130	16020	16910	19580	21360	23140	24920	28480	8'90
12474	13365	14256	15147	16038	16929	19602	21384	23166	24948	28512	8'91
12488	13380	14272	15164	16056	16948	19624	21408	23192	24976	28544	8'92
12502	13395	14288	15181	16074	16967	19646	21432	23218	25004	28576	8'93
12516	13410	14304	15198	16092	16986	19668	21456	23244	25032	28608	8'94
12530	13425	14320	15215	16110	17005	19690	21480	23270	25060	28640	8'95
12544	13440	14336	15232	16128	17024	19712	21504	23296	25088	28672	8'96
12558	13455	14352	15249	16146	17043	19734	21528	23322	25116	28704	8'97
12572	13470	14368	15266	16164	17062	19756	21552	23348	25144	28736	8'98
12586	13485	14384	15283	16182	17081	19778	21576	23374	25172	28768	8'99
12600	13500	14400	15300	16200	17100	19800	21600	23400	25200	28800	9'00

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
9'01	1802	2703	3604	4505	5406	6307	7208	8109	9911	10812	11713	
9'02	1804	2706	3608	4510	5412	6314	7216	8118	9922	10824	11726	
9'03	1806	2709	3612	4515	5418	6321	7224	8127	9938	10836	11739	
9'04	1808	2712	3616	4520	5424	6328	7232	8136	9944	10848	11752	
9'05	1810	2715	3620	4525	5430	6335	7240	8145	9955	10860	11765	
9'06	1812	2718	3624	4530	5436	6342	7248	8154	9966	10872	11778	
9'07	1814	2721	3628	4535	5442	6349	7256	8163	9977	10884	11791	
9'08	1816	2724	3632	4540	5448	6356	7264	8172	9988	10896	11804	
9'09	1818	2727	3636	4545	5454	6363	7272	8181	9999	10908	11817	
9'10	1820	2730	3640	4550	5460	6370	7280	8190	10010	10920	11830	
9'11	1822	2733	3644	4555	5466	6377	7288	8199	10021	10932	11843	
9'12	1824	2736	3648	4560	5472	6384	7296	8208	10032	10944	11856	
9'13	1826	2739	3652	4565	5478	6391	7304	8217	10043	10956	11869	
9'14	1828	2742	3656	4570	5484	6398	7312	8226	10054	10968	11882	
9'15	1830	2745	3660	4575	5490	6405	7320	8235	10065	10980	11895	
9'16	1832	2748	3664	4580	5496	6412	7328	8244	10076	10992	11908	
9'17	1834	2751	3668	4585	5502	6419	7336	8253	10087	11004	11921	
9'18	1836	2754	3672	4590	5508	6426	7344	8262	10098	11016	11934	
9'19	1838	2757	3676	4595	5514	6433	7352	8271	10109	11028	11947	
9'20	1840	2760	3680	4600	5520	6440	7360	8280	10120	11040	11960	
9'21	1842	2763	3684	4605	5526	6447	7368	8289	10131	11052	11973	
9'22	1844	2766	3688	4610	5532	6454	7376	8298	10142	11064	11986	
9'23	1846	2769	3692	4615	5538	6461	7384	8307	10153	11076	11999	
9'24	1848	2772	3696	4620	5544	6468	7392	8316	10164	11088	12012	
9'25	1850	2775	3700	4625	5550	6475	7400	8325	10175	11100	12025	
9'26	1852	2778	3704	4630	5556	6482	7408	8334	10186	11112	12038	
9'27	1854	2781	3708	4635	5562	6489	7416	8343	10197	11124	12051	
9'28	1856	2784	3712	4640	5568	6496	7424	8352	10208	11136	12064	
9'29	1858	2787	3716	4645	5574	6503	7432	8361	10219	11148	12077	
9'30	1860	2790	3720	4650	5580	6510	7440	8370	10230	11160	12090	
9'31	1862	2793	3724	4655	5586	6517	7448	8379	10241	11172	12103	
9'32	1864	2796	3728	4660	5592	6524	7456	8388	10252	11184	12116	
9'33	1866	2799	3732	4665	5598	6531	7464	8397	10263	11196	12129	
9'34	1868	2802	3736	4670	5604	6538	7472	8406	10274	11208	12142	
9'35	1870	2805	3740	4675	5610	6545	7480	8415	10285	11220	12155	
9'36	1872	2808	3744	4680	5616	6552	7488	8424	10296	11232	12168	
9'37	1874	2811	3748	4685	5622	6559	7496	8433	10307	11244	12181	
9'38	1876	2814	3752	4690	5628	6566	7504	8442	10318	11256	12194	
9'39	1878	2817	3756	4695	5634	6573	7512	8451	10329	11268	12207	
9'40	1880	2820	3760	4700	5640	6580	7520	8460	10340	11280	12220	
9'41	1882	2823	3764	4705	5646	6587	7528	8469	10351	11292	12233	
9'42	1884	2826	3768	4710	5652	6594	7536	8478	10362	11304	12246	
9'43	1886	2829	3772	4715	5658	6601	7544	8487	10373	11316	12259	
9'44	1888	2832	3776	4720	5664	6608	7552	8496	10384	11328	12272	
9'45	1890	2835	3780	4725	5670	6615	7560	8505	10395	11340	12285	
9'46	1892	2838	3784	4730	5676	6622	7568	8514	10406	11352	12298	
9'47	1894	2841	3788	4735	5682	6629	7576	8523	10417	11364	12311	
9'48	1896	2844	3792	4740	5688	6636	7584	8532	10428	11376	12324	
9'49	1898	2847	3796	4745	5694	6643	7592	8541	10439	11388	12337	
9'50	1900	2850	3800	4750	5700	6650	7600	8550	10450	11400	12350	

Portions of Lengths of 100 Feet. For Areas Insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet
12614	13515	14416	15317	16218	17119	18822	21624	23426	25228	28832	9'01
12628	13580	14482	15383	16286	17188	18844	21648	23452	25286	28864	9'02
12642	13545	14448	15351	16254	17157	18866	21672	23478	25284	28896	9'03
12656	13560	14464	15368	16272	17176	18888	21696	23504	25312	28928	9'04
12670	13575	14480	15385	16290	17195	18910	21720	23530	25340	28960	9'05
12684	13590	14496	15402	16308	17214	18932	21744	23556	25368	28992	9'06
12698	13605	14512	15419	16326	17238	18954	21768	23582	25396	29024	9'07
12712	13620	14528	15436	16344	17252	18976	21792	23608	25424	29056	9'08
12726	13635	14544	15453	16362	17271	18998	21816	23634	25452	29088	9'09
12740	13650	14560	15470	16380	17290	20020	21840	23660	25480	29120	9'10
12754	13665	14576	15487	16398	17309	20042	21864	23686	25508	29152	9'11
12768	13680	14592	15504	16416	17328	20064	21888	23712	25536	29184	9'12
12782	13695	14608	15521	16434	17347	20086	21912	23735	25564	29216	9'13
12796	13710	14624	15538	16452	17366	20108	21936	23764	25592	29248	9'14
12810	13725	14640	15555	16470	17385	20130	21960	23790	25620	29280	9'15
12824	13740	14656	15572	16488	17404	20152	21984	23816	25648	29312	9'16
12838	13755	14672	15589	16506	17423	20174	22008	23842	25676	29344	9'17
12852	13770	14688	15606	16524	17442	20196	22032	23868	25704	29376	9'18
12866	13785	14704	15623	16542	17461	20218	22056	23894	25732	29408	9'19
12880	13800	14720	15640	16560	17480	20240	22080	23920	25760	29440	9'20
12894	13815	14736	15657	16578	17499	20262	22104	23946	25788	29472	9'21
12908	13830	14752	15674	16596	17518	20284	22128	23972	25816	29504	9'22
12922	13845	14768	15691	16614	17537	20306	22152	23998	25844	29536	9'23
12936	13860	14784	15708	16632	17556	20328	22176	24024	25872	29568	9'24
12950	13875	14800	15725	16650	17575	20350	22200	24050	25900	29600	9'25
12964	13890	14816	15742	16668	17594	20372	22224	24076	25928	29632	9'26
12978	13905	14832	15759	16686	17613	20394	22248	24102	25956	29664	9'27
12992	13920	14848	15776	16704	17632	20416	22272	24128	25984	29696	9'28
13006	13935	14864	15793	16722	17651	20438	22296	24154	26012	29728	9'29
13020	13950	14880	15810	16740	17670	20460	22320	24180	26040	29760	9'30
13034	13965	14896	15827	16758	17689	20482	22344	24206	26068	29792	9'31
13048	13980	14912	15844	16776	17708	20504	22368	24232	26096	29824	9'32
13062	13995	14928	15861	16794	17727	20526	22392	24258	26124	29856	9'33
13076	14010	14944	15878	16812	17746	20548	22416	24284	26152	29888	9'34
13090	14025	14960	15895	16830	17765	20570	22440	24310	26180	29920	9'35
13104	14040	14976	15912	16848	17784	20592	22464	24336	26208	29952	9'36
13118	14055	14992	15929	16866	17803	20614	22488	24362	26236	29984	9'37
13132	14070	15008	15946	16884	17822	20636	22512	24388	26264	30016	9'38
13146	14085	15024	15963	16902	17841	20658	22536	24414	26292	30048	9'39
13160	14100	15040	15980	16920	17860	20680	22560	24440	26320	30080	9'40
13174	14115	15056	15997	16938	17879	20702	22584	24466	26348	30112	9'41
13188	14130	15072	16014	16956	17898	20724	22608	24492	26376	30144	9'42
13202	14145	15088	16031	16974	17917	20746	22632	24518	26404	30176	9'43
13216	14160	15104	16048	16992	17936	20768	22656	24544	26432	30208	9'44
13230	14175	15120	16065	17010	17955	20790	22680	24570	26460	30240	9'45
13244	14190	15136	16082	17028	17974	20812	22704	24596	26488	30272	9'46
13258	14205	15152	16099	17046	17993	20834	22728	24622	26516	30304	9'47
13272	14220	15168	16116	17064	18012	20856	22752	24648	26544	30336	9'48
13286	14235	15184	16133	17082	18031	20878	22776	24674	26572	30368	9'49
13300	14250	15200	16150	17100	18050	20900	22800	24700	26600	30400	9'50

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT											
	2	3	4	5	6	7	8	9	11	12	13	
9'51	1809	2853	3804	4755	5705	6657	7608	8559	10461	11412	12363	
9'52	1804	2856	3808	4760	5712	6664	7616	8568	10473	11424	12376	
9'53	1806	2859	3812	4765	5718	6671	7624	8577	10483	11436	12389	
9'54	1808	2862	3816	4770	5724	6678	7632	8586	10494	11448	12403	
9'55	1910	2865	3820	4775	5730	6686	7640	8595	10505	11460	12415	
9'56	1912	2868	3824	4780	5736	6692	7648	8604	10516	11472	12428	
9'57	1914	2871	3828	4785	5742	6699	7656	8613	10527	11484	12441	
9'58	1916	2874	3832	4790	5748	6705	7664	8622	10538	11496	12454	
9'59	1918	2877	3836	4795	5754	6713	7672	8631	10549	11508	12467	
9'60	1920	2880	3840	4800	5760	6720	7680	8640	10560	11520	12480	
9'61	1922	2883	3844	4805	5766	6727	7688	8649	10571	11532	12493	
9'62	1924	2886	3848	4810	5772	6734	7696	8658	10582	11544	12506	
9'63	1926	2889	3852	4815	5778	6741	7704	8667	10593	11556	12519	
9'64	1928	2892	3856	4820	5784	6748	7712	8676	10604	11568	12532	
9'65	1930	2895	3860	4825	5790	6755	7720	8685	10615	11580	12545	
9'66	1932	2898	3864	4830	5796	6762	7728	8694	10626	11592	12558	
9'67	1934	2901	3868	4835	5802	6769	7736	8703	10637	11604	12571	
9'68	1936	2904	3872	4840	5808	6776	7744	8712	10648	11616	12584	
9'69	1938	2907	3876	4845	5814	6783	7752	8721	10659	11628	12597	
9'70	1940	2910	3880	4850	5820	6790	7760	8730	10670	11640	12610	
9'71	1942	2913	3884	4855	5826	6797	7768	8739	10681	11652	12623	
9'72	1944	2916	3888	4860	5832	6804	7776	8748	10692	11664	12636	
9'73	1946	2919	3892	4865	5838	6811	7784	8757	10703	11676	12649	
9'74	1948	2922	3896	4870	5844	6818	7792	8766	10714	11688	12662	
9'75	1950	2925	3900	4875	5850	6825	7800	8775	10725	11700	12675	
9'76	1952	2928	3904	4880	5856	6832	7808	8784	10736	11712	12688	
9'77	1954	2931	3908	4885	5862	6839	7816	8793	10747	11724	12701	
9'78	1956	2934	3912	4890	5868	6846	7824	8802	10758	11736	12714	
9'79	1958	2937	3916	4895	5874	6853	7832	8811	10769	11748	12727	
9'80	1960	2940	3920	4900	5880	6860	7840	8820	10780	11760	12740	
9'81	1962	2943	3924	4905	5886	6867	7848	8829	10791	11772	12753	
9'82	1964	2946	3928	4910	5892	6874	7856	8838	10802	11784	12766	
9'83	1966	2949	3932	4915	5898	6881	7864	8847	10813	11796	12779	
9'84	1968	2952	3936	4920	5904	6888	7872	8856	10824	11808	12792	
9'85	1970	2955	3940	4925	5910	6895	7880	8865	10835	11820	12805	
9'86	1972	2958	3944	4930	5916	6902	7888	8874	10846	11832	12818	
9'87	1974	2961	3948	4935	5922	6909	7896	8883	10857	11844	12831	
9'88	1976	2964	3952	4940	5928	6916	7904	8892	10868	11856	12844	
9'89	1978	2967	3956	4945	5934	6923	7912	8901	10879	11868	12857	
9'90	1980	2970	3960	4950	5940	6930	7920	8910	10890	11880	12870	
9'91	1982	2973	3964	4955	5946	6937	7928	8919	10901	11892	12883	
9'92	1984	2976	3968	4960	5952	6944	7936	8928	10912	11904	12896	
9'93	1986	2979	3972	4965	5958	6951	7944	8937	10923	11916	12909	
9'94	1988	2982	3976	4970	5964	6958	7952	8946	10934	11928	12922	
9'95	1990	2985	3980	4975	5970	6965	7960	8955	10945	11940	12935	
9'96	1992	2988	3984	4980	5976	6972	7968	8964	10956	11952	12948	
9'97	1994	2991	3988	4985	5982	6979	7976	8973	10967	11964	12961	
9'98	1996	2994	3992	4990	5988	6986	7984	8982	10978	11976	12974	
9'99	1998	2997	3996	4995	5994	6993	7992	8991	10989	11988	12987	
10'00	2000	3000	4000	5000	6000	7000	8000	9000	11000	12000	13000	

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
13914	14265	15216	16167	17118	18069	20922	22824	24726	26628	30432	9'31
13928	14280	15232	16184	17136	18088	20944	22848	24752	26656	30464	9'32
13942	14295	15248	16201	17154	18107	20966	22872	24778	26684	30496	9'53
13956	14310	15264	16218	17172	18126	20988	22896	24804	26712	30528	9'54
13970	14325	15280	16235	17190	18145	21010	22920	24830	26740	30560	9'55
13984	14340	15296	16252	17208	18164	21032	22944	24856	26768	30592	9'56
13998	14355	15312	16269	17226	18183	21054	22968	24882	26796	30624	9'57
13412	14370	15328	16286	17244	18202	21076	22992	24908	26824	30656	9'58
13426	14385	15344	16303	17262	18221	21098	23016	24934	26852	30688	9'59
13440	14400	15360	16320	17280	18240	21120	23040	24960	26880	30720	9'60
13454	14415	15376	16337	17298	18259	21142	23064	24986	26908	30752	9'61
13468	14430	15392	16354	17316	18278	21164	23088	25012	26936	30784	9'62
13482	14445	15408	16371	17334	18297	21186	23112	25038	26964	30816	9'63
13496	14460	15424	16388	17352	18316	21208	23136	25064	26992	30848	9'64
13510	14475	15440	16405	17370	18335	21230	23160	25090	27020	30880	9'65
13524	14490	15456	16422	17388	18354	21252	23184	25116	27048	30912	9'66
13538	14505	15472	16439	17406	18373	21274	23208	25142	27076	30944	9'67
13552	14520	15488	16456	17424	18392	21296	23232	25168	27104	30976	9'68
13566	14535	15504	16473	17442	18411	21318	23256	25194	27132	31008	9'69
13580	14550	15520	16490	17460	18430	21340	23280	25220	27160	31040	9'70
13594	14565	15536	16507	17478	18449	21362	23304	25246	27188	31072	9'71
13608	14580	15552	16524	17496	18468	21384	23328	25272	27216	31104	9'72
13622	14595	15568	16541	17514	18487	21406	23352	25298	27244	31136	9'73
13636	14610	15584	16558	17532	18506	21428	23376	25324	27272	31168	9'74
13650	14625	15600	16575	17550	18525	21450	23400	25350	27300	31200	9'75
13664	14640	15616	16592	17568	18544	21472	23424	25376	27328	31232	9'76
13678	14655	15632	16609	17586	18563	21494	23448	25402	27356	31264	9'77
13692	14670	15648	16626	17604	18582	21516	23472	25428	27384	31296	9'78
13706	14685	15664	16643	17622	18601	21538	23496	25454	27412	31328	9'79
13720	14700	15680	16660	17640	18620	21560	23520	25480	27440	31360	9'80
13734	14715	15696	16677	17658	18639	21582	23544	25506	27468	31392	9'81
13748	14730	15712	16694	17676	18658	21604	23568	25532	27496	31424	9'82
13762	14745	15728	16711	17694	18677	21626	23592	25558	27524	31456	9'83
13776	14760	15744	16728	17712	18696	21648	23616	25584	27552	31488	9'84
13790	14775	15760	16745	17730	18715	21670	23640	25610	27580	31520	9'85
13804	14790	15776	16762	17748	18734	21692	23664	25636	27608	31552	9'86
13818	14805	15792	16779	17766	18753	21714	23688	25662	27636	31584	9'87
13832	14820	15808	16796	17784	18772	21736	23712	25688	27664	31616	9'88
13846	14835	15824	16813	17802	18791	21758	23736	25714	27692	31648	9'89
13860	14850	15840	16830	17820	18810	21780	23760	25740	27720	31680	9'90
13874	14865	15856	16847	17838	18829	21802	23784	25766	27748	31712	9'91
13888	14880	15872	16864	17856	18848	21824	23808	25792	27776	31744	9'92
13902	14895	15888	16881	17874	18867	21846	23832	25818	27804	31776	9'93
13916	14910	15904	16898	17892	18886	21868	23856	25844	27832	31808	9'94
13930	14925	15920	16915	17910	18905	21890	23880	25870	27860	31840	9'95
13944	14940	15936	16932	17928	18924	21912	23904	25896	27888	31872	9'96
13958	14955	15952	16949	17946	18943	21934	23928	25922	27916	31904	9'97
13972	14970	15968	16966	17964	18962	21956	23952	25948	27944	31936	9'98
13986	14985	15984	16983	17982	18981	21978	23976	25974	27972	31968	9'99
14000	15000	16000	17000	18000	19000	22000	24000	26000	28000	30000	10'00

TABLE I.—Contents of Earthwork in Cubic Feet of Central Point Two Places

Depth in Feet.	CENTRAL TOP WIDTH OF EMBANKMENT										
	2	3	4	5	6	7	8	9	11	12	13
20·00	4000	6000	8000	10000	12000	14000	16000	18000	22000	24000	26000
30·00	6000	9000	12000	15000	18000	21000	24000	27000	33000	36000	39000
40·00	8000	12000	16000	20000	24000	28000	32000	36000	44000	48000	52000
50·00	10000	15000	20000	25000	30000	35000	40000	45000	55000	60000	65000
60·00	12000	18000	24000	30000	36000	42000	48000	54000	66000	72000	78000
70·00	14040	21000	28080	35000	42000	49000	56000	63000	77000	84000	91000

Chapter III.—Preparation of Tables for the Contents of the Slopes and Table 11.

20. Method of Preparation of the Table for finding Area of Cross-Section of Slopes.—Let Fig. 7 represent the bank, or, if inverted, the cutting; in which the horizontal lines are supposed to be $\frac{1}{100}$ foot apart. Call this depth h . Taking only one slope, say the left-hand one, its area will depend on the value of S . Thus for any depth, AE , the area of the triangle ACE or BFD equals, CE or FD being equal to Sh .

$$\frac{1}{2} h \times Sh = \frac{1}{2} h^2 S \dots \dots \dots (27)$$

The area for an additional depth h , EE_1 , equals

$$\left. \begin{aligned} \frac{1}{2} h \times Sh + h \times Sh &= \frac{3}{2} h^2 S \\ &= 2 h^2 S - \frac{1}{2} h^2 S \dots \dots \dots \end{aligned} \right\} (28)$$

The area for the next additional depth, $E_1 E_2$,

$$\left. \begin{aligned} \frac{3}{2} h^2 S + h \times Sh &= \frac{5}{2} h^2 S \\ &= 3 h^2 S - \frac{1}{2} h^2 S \dots \dots \dots \end{aligned} \right\} (29)$$

The area of the n^{th} layer of depth h is

$$A = nh^2 S - \frac{1}{2} h^2 S \dots \dots \dots (30)$$

The increase in area for each layer is $h^2 S$.

The area of the slope for depth, nh , will be the sum of all these depths and equals

$$\left. \begin{aligned} \frac{1}{2} h^2 S + \frac{3}{2} h^2 S + \frac{5}{2} h^2 S + \dots \dots + (n - \frac{1}{2}) h^2 S \\ = h^2 S \left(\frac{1}{2} + \frac{3}{2} + \frac{5}{2} + \dots + (n - \frac{1}{2}) \right) = \frac{n^2}{2} h^2 S \dots \dots \dots \end{aligned} \right\} (31)$$

If this result is multiplied by 100 then the cubic contents for 100 ft. is obtained by the formula :

$$V = \frac{100}{2} n^2 h^2 S \dots \dots \dots (32)$$

Portions of Lengths of 100 Feet. For Areas insert a Decimal to the Left.

OR WIDTH OF BASE OF CUTTING IN FEET.

14	15	16	17	18	19	22	24	26	28	32	Depth in Feet.
28000	30000	32000	34000	36000	38000	44000	48000	52000	56000	64000	20-00
42000	45000	48000	51000	54000	57000	66000	72000	78000	84000	96000	30-00
56000	60000	64000	68000	72000	76000	88000	96000	104000	112000	128000	40-00
70000	75000	80000	85000	90000	95000	110000	120000	130000	140000	160000	50-00
84000	90000	96000	102000	108000	114000	132000	144000	156000	168000	192000	60-00
98000	105000	112000	119000	126000	133000	154000	168000	182000	196000	224000	70-00

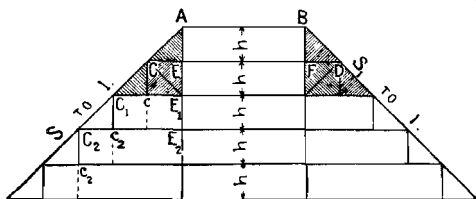


Fig. 7.—Cross-Section of Bank, or if Inverted, Cutting.

21. Table II.—How Prepared.—The results in this Table are obtained from *Formula 32* and can be applied to banks or cuts in level ground up to a height of 70 ft. having side slopes varying from $\frac{3}{4}$ to 1 to 6 to 1, h increasing by .01 ft. for the first 34 ft. and then by .1 ft. By inserting a decimal point two places to the left the result will be the area in sq. ft. of the triangular portion of the slope.

As $\frac{1}{4}$ and $\frac{1}{2}$ are one-tenths of $2\frac{1}{2}$ and 5 respectively, values of slopes of $\frac{3}{4}$ to 1 and $\frac{1}{2}$ to 1 are obtained from the results of $2\frac{1}{2}$: 1 and 5 : 1 in the Table II by inserting a decimal point one place to the left.

Ex. 9. Find the superficial area and cubic contents for the slope portion of a bank with side slope 2 to 1, height of bank = 3 ft. Here $n=200$; $h=.01$.

∴ Cubic contents of one slope = $\frac{1}{3} \times 100 \times 300^2 \times (.01)^2 \times 2 = 900$ c. ft. This is also found from Table II, p. 59, where the total height = $n \times h = 300 \times .01 = 3$ ft.

∴ The area of the Δ Cross-Section = 9 sq. ft.

22. Compounding the Slope-ratios.—The Table II gives values for one slope for various slope-ratios and depths. When both the slopes are the same the contents for both of them equal the quantities for double the single slope. When the slopes are different the quantities for the two different slope portions are added when the side-heights at edges of base fall within the trapezoid forming the cross-section on level

ground, *i.e.*, when the Δ s forming the slope portions are right angled Δ s (Figs 1, 2, 7).

When the height falls outside the Δ the contents for the slopes are to be subtracted.

Hence to find the cubic contents for the slope portions the slope ratio are to be added or subtracted as in the following examples :—

Ex. 10. Find the total slope for a bank having side slopes, $1\frac{1}{2}$ to 1 and 5 to 1 in Fig. 1. $S + S_1 = 1\frac{1}{2} + 2 = 3\frac{1}{2}$.

Ex. 11. Find the total slope for Δ s, ALF and BEG in Fig. 3. Here the heights becoming bases the slope-ratios are reversed. If $S_1=3$, $S=2$ and $S_2=5$. and x_1 become the depths, and y_1 and y_2 heights. The slope-ratios become $\frac{1}{3}$ and $\frac{1}{5}$ respectively. $\therefore$ Total slope-ratio for Δ BEG with depth $x_1 = \frac{1}{3} + \frac{1}{5} = .533$.

and " " " " Δ ALF " " $x_2 = \frac{1}{3} - \frac{1}{5} = .3$.

Ex. 12. Find the total slope-ratios for Δ s, ALG₁ and BEG₁, when $S=S_1=1\frac{1}{2}$; $S_2=6$, (Fig. 3).

$\therefore$ Total slope-ratio for Δ ALG₁ = $6 - 1.5 = 4.5$ with depth h_1 .

and " " " " Δ BEG₁ = $6 + 1\frac{1}{2} = 7.5$ " " h_2 .

23. To find the Contents for Slopes when the depth is increasing by .01 ft. and when only the quantity for depth increasing by .1 is given in Table III.—These are obtained from Formula $\frac{1}{2}S(H+h)^2 - H^2$... (33)

where H is the depth of a bank or cut increasing by .1 only and h equal the increase in every .01 and S =side slope-ratio.

Ex. 13. Find the cubic contents for a slope for depths 34.01, 34.02, 34.03, 34.04, 34.05, 34.06, 34.07, 34.08, 34.09 ft. respectively for lengths of 100' where the cubic content for depth 34.00 ft. only is given in the Table II to be 11560 c.ft. and side slopes 2 to 1. The following table explains itself :—

Depth in feet.	Cubic Contents for Depth 34 ft.	Increase.	Total Cubic Contents.	Depth in feet.	Cubic Contents for Depth 34 ft.	Increase.	Total Cubic Contents.
34.00	115600	...	115600	34.06	115600	408.36	116008.36
34.01	115600	68.01	115668.01	34.07	115600	476.49	116076.49
34.02	115600	136.04	115736.04	34.08	115600	544.64	116144.64
34.03	115600	204.09	115804.09	34.09	115600	612.81	116212.81
34.04	115600	272.16	115872.16	34.10	115600	681	116281*
34.05	115600	340.25	115940.25	...	...	...	...

* This result agreeing with that in Table III.

From the above, the increase, C , for each .01 is obtained by the

$$\text{Formula : } C = \frac{1}{2}S(2nH + n^2) \quad \dots \quad (34)$$

where H is the depth for quantity-increasing, C , by .1 and n the number of the increment by .01; S = side slope-ratio.

CALCULATION OF EARTHWORK IN SLOPES. 53

Ex. 14. Find the cubic content of a slope portion for depth 47' 58" ft. when the cubic content for 47' 5" ft. is only given in Table III to be 564062 c.ft. for a length of 100 ft., and side slope of 5 to 1.

$$\therefore \text{Content for } '08'' = \frac{5}{8} (2 \times 8 \times 47 \cdot 5 + '8^3) = \frac{5}{8} (760 + '64) = 1901 \cdot 6 \text{ c.ft.}$$

$$\therefore \text{,, ,, } 47 \cdot 58' = 564062 + 1902 = 565964 \text{ c.ft.}$$

$$\therefore \text{Area* of the Cross-section for depth } 47 \cdot 58' = 5659 \cdot 64 \text{ sq. ft.}$$

Ex. 15. Find the area and cubic content for depth 56' 41" when the cubic content for 56' 4" is only given in Table III to be 795240 c. ft. for a length of 100' and combined side slope of 5 to 1, i.e., with $S=3$ and $S_1=2$.

$$\therefore \text{Content for } '01'' = \frac{5}{8} (2 \times 1 \times 56 \cdot 4 + '1^3) = \frac{5}{8} (112 \cdot 8 + '01) = 282 \cdot 02 \text{ c.ft.}$$

$$\therefore \text{,, ,, } 56 \cdot 41' = 795240 + 282 = 795522 \text{ c. ft.}$$

$$\therefore \text{Area* of the cross-section for depth } 56 \cdot 41' = 7955 \cdot 22 \text{ sq. ft.}$$

Ex. 16. Find the area and cubic content for depth 44' 43" for a length of 100 and combined side slope of 5 to 1.

$$\therefore \text{Content for } '03'' = \frac{5}{8} (2 \times 3 \times 44 \cdot 4 + '3^3) = 666 \cdot 22 \text{ c.ft.}$$

$$\therefore \text{,, ,, } 44 \cdot 43' = 492840 \text{ (from Table III)} + 666 = 493506 \text{ c.ft.}$$

$$\therefore \text{Area* of the cross-section for } 44 \cdot 43' = 4935 \cdot 06 \text{ sq. ft.}$$

Ex. 17. Find the cubic content and area for depth 40* 565 for a length of 100' and combined side slope of 5 to 1. Content for 40' 5" ft. being 410062 from Table III

$$\therefore \text{Content for } '65'' = \frac{5}{8} (2 \times 6 \cdot 5 \times 40 \cdot 5 + '65^3) = 1317 \text{ c.ft.}$$

$$\therefore \text{,, ,, } 40 \cdot 565' = 410062 + 1317 = 411379 \text{ c.ft.}$$

$$\therefore \text{Area of cross-section for } 40 \cdot 565' = 4113 \cdot 79 \text{ sq.ft.}$$

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet,	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
0.01	0.008	0.008	0.007	0.010	0.012	0.015	0.017	0.020	0.025	0.030
0.02	0.015	0.020	0.020	0.040	0.050	0.060	0.070	0.080	0.100	0.120
0.03	0.033	0.045	0.067	0.090	0.112	0.135	0.157	0.180	0.225	0.270
0.04	0.060	0.080	0.120	0.160	0.200	0.240	0.280	0.320	0.400	0.480
0.05	0.093	0.125	0.187	0.250	0.312	0.375	0.437	0.500	0.625	0.750
0.06	0.185	0.180	0.270	0.360	0.450	0.540	0.630	0.720	0.900	1.080
0.07	0.183	0.245	0.367	0.490	0.612	0.735	0.857	0.980	1.225	1.470
0.08	0.240	0.320	0.480	0.640	0.800	0.960	1.120	1.280	1.600	1.920
0.09	0.308	0.405	0.607	0.812	1.012	1.215	1.419	1.624	2.025	2.426
0.10	0.375	0.500	0.750	1.000	1.250	1.500	1.750	2.000	2.500	3.000
0.11	0.453	0.605	0.907	1.21	1.512	1.81	2.11	2.41	3.02	3.63
0.12	0.54	0.72	1.08	1.44	1.80	2.16	2.52	2.88	3.60	4.32
0.13	0.63	0.84	1.26	1.69	2.10	2.53	2.95	3.38	4.21	5.06
0.14	0.78	0.98	1.47	1.96	2.45	2.94	3.45	3.92	4.90	5.88
0.15	0.84	1.12	1.68	2.25	2.80	3.37	3.93	4.50	5.60	6.74
0.16	0.96	1.28	1.92	2.56	3.20	3.84	4.48	5.12	6.40	7.68
0.17	1.08	1.44	2.16	2.89	3.60	4.33	5.05	5.78	7.20	8.66
0.18	1.21	1.62	2.43	3.24	4.05	4.86	5.67	6.48	8.10	9.72
0.19	1.35	1.80	2.70	3.61	4.50	5.41	6.31	7.22	9.00	10.82
0.20	1.50	2.00	3.00	4.00	5.00	6.00	7.00	8.00	10.00	12.00
0.21	1.51	2.20	3.30	4.41	5.50	6.61	7.71	8.82	11.00	13.22
0.22	1.81	2.42	3.63	4.84	6.05	7.26	8.47	9.68	12.10	14.52
0.23	1.98	2.64	3.96	5.29	6.60	7.93	9.25	10.58	13.20	15.86
0.24	2.16	2.88	4.32	5.76	7.20	8.64	10.08	11.52	14.40	17.28
0.25	2.34	3.12	4.68	6.26	7.80	9.37	10.93	12.50	15.60	18.74
0.26	2.53	3.36	5.07	6.76	8.46	10.14	11.88	13.62	16.90	20.28
0.27	2.73	3.64	5.46	7.29	9.10	10.98	12.75	14.58	18.20	21.86
0.28	2.94	3.92	5.88	7.84	9.80	11.76	13.72	15.68	19.60	23.52
0.29	3.15	4.20	6.30	8.41	10.50	12.61	14.71	16.82	21.00	25.22
0.30	3.37	4.50	6.75	9.00	11.25	13.50	15.75	18.00	22.50	27.00
0.31	3.60	4.80	7.20	9.61	12.00	14.41	16.81	19.22	24.00	28.82
0.32	3.84	5.12	7.68	10.24	12.80	15.36	17.92	20.48	25.60	30.72
0.33	4.08	5.44	8.16	10.89	13.60	16.33	19.05	21.78	27.20	32.66
0.34	4.33	5.76	8.67	11.56	14.45	17.34	20.23	23.12	28.90	34.68
0.35	4.59	6.12	9.18	12.25	15.30	18.37	21.43	24.50	30.60	36.74
0.36	4.86	6.48	9.72	12.96	16.20	19.44	22.68	25.93	32.40	38.88
0.37	5.13	6.84	10.26	13.69	17.10	20.58	23.95	27.38	34.20	41.06
0.38	5.41	7.22	10.83	14.44	18.05	21.66	25.27	28.88	36.10	43.32
0.39	5.70	7.60	11.40	15.21	19.00	22.81	26.61	30.43	38.00	45.63
0.40	6.00	8.00	12.00	16.00	20.00	24.00	28.00	32.00	40.00	48.00
0.41	6.30	8.40	12.60	16.81	21.00	25.21	29.41	33.62	42.00	50.42
0.42	6.61	8.82	13.23	17.64	22.05	26.45	30.87	35.28	44.10	52.92
0.43	6.93	9.24	13.86	18.49	23.10	27.73	32.35	36.98	46.20	55.46
0.44	7.26	9.68	14.52	19.36	24.20	29.04	33.88	38.72	48.40	58.08
0.45	7.59	10.12	15.18	20.25	25.30	30.37	35.43	40.50	50.60	60.74
0.46	7.93	10.58	15.87	21.16	26.45	31.74	37.03	42.32	52.90	63.48
0.47	8.28	11.04	16.56	22.09	27.60	33.18	38.65	44.18	55.20	66.26
0.48	8.64	11.52	17.28	23.04	28.80	34.55	40.32	46.08	57.60	69.12
0.49	9.00	12.00	18.00	24.01	30.00	36.01	42.01	48.02	60.00	72.02
0.50	9.37	12.50	18.75	25.00	31.25	37.50	43.75	50.00	62.50	75.00

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
0.51	9.75	18.00	19.50	26.01	32.50	39.01	45.50	52.03	58.02
0.52	10.14	18.52	20.28	27.04	33.80	40.56	47.32	54.08	60.12
0.53	10.53	19.04	21.06	28.09	35.10	42.13	49.15	56.18	62.26
0.54	10.93	19.58	21.87	29.16	36.45	43.74	51.03	58.32	64.48
0.55	11.34	20.12	22.68	30.25	37.80	45.37	52.93	60.50	66.74
0.56	11.76	20.68	23.52	31.36	39.20	47.04	54.88	62.72	69.06
0.57	12.18	21.24	24.36	32.49	40.60	48.73	56.85	64.98	71.46
0.58	12.61	21.82	25.23	33.64	42.05	50.46	58.87	67.28	73.92
0.59	13.05	22.40	26.10	34.81	43.50	52.21	60.91	69.62	76.44
0.60	13.50	23.00	27.00	36.00	45.00	54.00	63.00	72.00	79.00
0.61	13.95	23.60	27.90	37.21	46.50	55.81	65.11	74.42	81.62
0.62	14.41	24.22	28.83	38.44	48.05	57.66	67.27	76.88	84.32
0.63	14.88	24.84	29.76	39.69	49.60	59.53	69.45	79.38	87.08
0.64	15.36	25.48	30.72	40.96	51.20	61.44	71.68	81.92	89.92
0.65	15.84	26.12	31.80	42.25	52.80	63.37	73.98	84.50	92.84
0.66	16.33	26.78	32.87	43.56	54.45	65.34	76.25	87.12	95.88
0.67	16.83	27.44	33.96	44.89	56.10	67.33	78.55	89.78	98.96
0.68	17.34	28.12	35.06	46.24	57.80	69.46	80.92	92.48	101.60
0.69	17.85	28.80	36.10	47.61	59.50	71.61	83.31	95.22	104.32
0.70	18.37	29.50	37.25	49.00	61.25	73.50	85.75	98.00	107.00
0.71	18.90	30.20	37.80	50.41	63.00	75.61	88.20	100.82	109.82
0.72	19.44	30.92	38.88	51.84	64.80	77.76	90.72	103.68	112.72
0.73	19.98	31.64	39.96	53.29	66.60	79.93	93.25	106.58	115.68
0.74	20.53	32.38	41.07	54.76	68.45	82.14	95.83	109.52	118.68
0.75	21.09	33.12	42.18	56.25	70.30	84.37	98.43	112.50	121.74
0.76	21.66	33.88	43.32	57.76	72.20	86.64	101.08	115.52	124.88
0.77	22.23	34.64	44.46	59.29	74.10	88.93	103.75	118.58	128.00
0.78	22.81	35.42	45.63	60.84	76.05	91.26	106.47	121.68	131.22
0.79	23.40	36.20	46.80	62.41	78.00	93.61	109.21	124.82	134.48
0.80	24.00	37.00	48.00	64.00	80.00	96.00	112.00	128.00	137.00
0.81	24.60	37.80	49.20	65.61	82.00	98.41	114.81	131.22	140.62
0.82	25.21	38.62	50.45	67.24	84.05	100.86	117.67	134.48	144.32
0.83	25.83	39.44	51.66	68.89	86.10	103.35	120.56	137.72	148.08
0.84	26.46	40.28	52.92	70.56	88.20	105.84	123.48	141.12	151.88
0.85	27.09	41.12	54.18	72.25	90.30	108.73	126.43	144.50	155.74
0.86	27.73	41.98	55.47	73.96	92.45	110.94	129.43	147.92	159.68
0.87	28.38	42.84	56.76	75.69	94.60	113.53	131.45	151.38	163.68
0.88	29.04	43.72	58.08	77.44	96.80	116.16	133.52	154.88	167.72
0.89	29.70	44.60	59.40	79.21	99.00	118.81	135.60	158.40	171.80
0.90	30.37	45.50	60.75	81.00	101.25	121.50	137.75	162.00	175.00
0.91	31.05	46.40	62.10	82.81	103.50	124.21	140.91	165.62	178.22
0.92	31.74	47.32	63.48	84.64	105.80	126.96	143.12	169.28	181.48
0.93	32.43	48.24	64.86	86.49	108.10	129.79	145.35	172.98	184.78
0.94	33.13	49.18	66.27	88.56	110.45	132.54	148.63	176.72	188.12
0.95	33.84	50.12	67.68	90.25	112.80	135.73	151.58	180.50	191.48
0.96	34.56	51.08	69.12	92.16	115.20	138.24	154.88	184.32	194.88
0.97	35.28	52.04	70.56	94.09	117.60	141.13	158.12	188.18	198.32
0.98	36.01	53.02	72.00	96.04	120.05	144.08	161.07	192.00	201.80
0.99	36.75	54.00	73.50	98.01	122.50	147.01	171.50	196.00	205.32
1.00	37.50	55.00	75.00	100.00	125.00	150.00	175.00	200.00	210.00

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	3 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
1'01	38	51	76	102	127	153	179	204	255	306
1'02	39	52	78	104	130	156	182	208	260	312
1'03	40	53	80	106	133	159	186	212	265	318
1'04	41	54	81	108	135	162	189	216	270	324
1'05	41	55	83	110	138	166	193	220	276	331
1'06	42	56	84	112	140	169	197	225	281	337
1'07	43	57	86	114	143	173	200	229	286	343
1'08	44	58	87	117	146	176	204	233	292	350
1'09	45	59	89	119	148	178	208	238	297	356
1'10	45	60	91	121	151	181	212	242	302	363
1'11	46	62	92	123	154	185	216	246	308	370
1'12	47	63	94	125	157	188	220	251	314	376
1'13	48	64	96	128	160	192	223	255	319	383
1'14	49	65	97	130	162	195	227	260	325	390
1'15	50	66	99	132	165	199	231	264	331	397
1'16	50	67	101	135	168	202	235	269	336	404
1'17	51	68	103	137	171	205	240	274	342	411
1'18	52	70	104	139	174	209	244	278	348	418
1'19	53	71	106	142	177	212	248	283	354	425
1'20	54	72	108	144	180	216	253	288	360	432
1'21	55	73	110	146	183	220	256	293	366	439
1'22	56	74	112	149	186	223	260	298	372	447
1'23	57	76	113	151	189	227	265	303	378	454
1'24	58	77	115	154	192	231	269	308	384	461
1'25	59	78	117	156	195	235	273	312	391	469
1'26	60	79	119	159	198	238	278	318	397	476
1'27	60	81	121	161	202	242	283	323	403	484
1'28	61	82	123	164	205	246	287	328	410	492
1'29	62	83	125	166	208	250	290	331	416	499
1'30	63	84	127	169	211	254	296	338	422	501
1'31	64	85	129	172	213	257	300	343	427	515
1'32	65	87	131	174	218	261	305	348	436	523
1'33	66	88	133	177	221	265	310	354	442	531
1'34	67	90	135	180	224	269	314	359	449	539
1'35	68	91	137	182	228	274	319	364	456	547
1'36	69	92	139	185	231	277	324	370	462	555
1'37	70	94	141	188	235	282	328	375	469	563
1'38	71	95	143	190	238	286	333	381	476	571
1'39	72	97	145	193	241	290	338	386	483	580
1'40	73	98	147	196	245	294	343	392	490	588
1'41	75	99	149	199	248	298	348	398	497	596
1'42	76	101	151	202	252	302	353	403	504	605
1'43	77	102	153	204	256	307	358	409	511	613
1'44	78	104	156	207	259	311	363	415	518	622
1'45	79	105	158	210	263	316	368	420	526	632
1'46	80	107	160	213	266	320	373	426	533	639
1'47	81	108	162	216	270	324	378	432	540	648
1'48	82	110	164	219	274	329	383	438	548	657
1'49	83	111	166	222	277	333	389	444	555	666
1'50	84	112	169	225	281	337	394	450	563	675

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	2:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
1'51	85	114	171	228	285	342	399	456	570	684
1'52	87	116	173	231	289	347	404	462	578	693
1'53	88	117	176	234	293	351	410	468	585	702
1'54	89	119	178	237	296	356	415	474	593	711
1'55	90	120	180	240	300	361	420	480	601	721
1'56	91	122	183	243	304	365	426	487	608	730
1'57	92	123	185	246	308	370	431	493	616	739
1'58	94	125	187	250	312	374	437	499	624	749
1'59	95	126	190	253	316	379	442	506	632	758
1'60	96	128	192	256	320	384	448	512	640	768
1'61	97	130	194	259	324	389	454	518	648	778
1'62	98	131	197	262	328	394	459	525	656	787
1'63	100	133	199	266	332	399	465	531	664	797
1'64	101	134	202	269	336	403	471	538	672	807
1'65	102	136	204	273	340	409	476	544	681	817
1'66	103	138	207	276	344	413	482	551	689	827
1'67	105	139	209	279	349	418	489	559	697	837
1'68	106	141	212	282	353	423	494	564	706	847
1'69	107	143	214	286	357	428	500	571	714	857
1'70	108	144	217	289	361	433	506	578	722	867
1'71	110	146	219	292	365	438	512	585	731	877
1'72	111	148	222	296	370	444	518	592	740	888
1'73	112	150	224	299	373	449	524	599	746	898
1'74	114	151	227	303	378	454	530	605	757	908
1'75	115	153	230	306	383	460	536	612	766	919
1'76	116	155	232	310	387	465	542	620	774	929
1'77	117	157	235	313	392	470	548	627	783	940
1'78	119	158	238	317	396	475	554	634	793	951
1'79	120	160	240	320	400	481	561	641	801	961
1'80	121	162	243	324	405	486	567	648	810	972
1'81	123	164	246	328	409	491	573	655	819	983
1'82	124	166	249	331	414	497	580	662	828	994
1'83	126	167	251	335	419	502	586	670	837	1005
1'84	127	169	254	339	423	508	593	677	846	1016
1'85	128	171	257	342	428	514	599	684	855	1027
1'86	130	173	259	346	432	519	605	692	865	1038
1'87	131	175	262	350	437	525	612	699	874	1049
1'88	133	177	265	353	442	530	619	707	884	1060
1'89	134	179	268	357	446	536	625	714	893	1072
1'90	135	180	271	361	451	541	632	722	902	1083
1'91	137	182	274	365	456	547	638	730	912	1094
1'92	138	184	276	369	461	553	645	737	922	1106
1'93	140	186	279	373	466	559	652	745	931	1117
1'94	141	188	282	376	470	565	659	753	941	1129
1'95	143	190	285	380	475	571	665	760	951	1141
1'96	144	192	288	384	480	576	672	768	960	1152
1'97	146	194	291	388	485	582	679	776	970	1164
1'98	147	196	294	392	490	588	686	784	980	1176
1'99	148	198	297	396	495	594	693	792	990	1188
2'00	150	200	300	400	500	600	700	800	1000	1200

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	2 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
2'01	151	202	303	404	505	606	707	808	1010	1212
2'02	153	204	306	408	510	612	714	816	1020	1224
2'03	155	206	309	412	515	618	721	824	1030	1236
2'04	156	208	312	416	520	624	728	832	1040	1248
2'05	158	210	315	420	525	631	735	840	1051	1261
2'06	159	212	318	424	530	637	743	849	1061	1275
2'07	161	214	321	428	536	645	750	857	1071	1285
2'08	162	216	324	433	541	649	757	865	1082	1298
2'09	164	218	328	437	546	655	764	874	1092	1310
2'10	166	220	331	441	551	661	772	882	1102	1323
2'11	167	223	334	445	556	668	779	890	1113	1336
2'12	169	225	337	449	562	674	787	899	1124	1348
2'13	170	227	340	454	567	681	794	907	1134	1361
2'14	172	229	343	458	572	687	801	916	1145	1374
2'15	173	231	347	462	578	694	809	924	1156	1387
2'16	175	233	350	467	583	700	816	933	1166	1400
2'17	177	235	353	471	589	706	824	942	1177	1413
2'18	178	238	356	475	594	713	832	950	1188	1426
2'19	180	240	360	480	599	719	839	959	1199	1439
2'20	181	242	363	484	605	726	847	968	1210	1452
2'21	183	244	366	488	610	733	855	977	1221	1465
2'22	185	246	370	493	616	739	862	986	1232	1479
2'23	186	249	373	497	622	746	870	995	1243	1492
2'24	188	251	376	502	627	753	878	1004	1254	1505
2'25	190	253	380	506	633	760	886	1012	1266	1519
2'26	192	255	383	511	638	766	894	1022	1277	1532
2'27	193	258	386	515	644	773	902	1031	1288	1546
2'28	195	260	390	520	650	780	910	1040	1300	1560
2'29	197	262	393	524	655	787	918	1049	1311	1575
2'30	198	264	397	529	661	793	926	1058	1322	1587
2'31	200	267	400	534	667	800	934	1067	1334	1601
2'32	202	269	404	539	673	807	942	1076	1346	1615
2'33	204	271	407	543	679	814	950	1086	1357	1629
2'34	205	274	411	548	684	821	958	1095	1369	1643
2'35	207	276	414	552	690	829	966	1104	1381	1657
2'36	209	278	418	557	696	835	975	1114	1392	1671
2'37	211	281	421	562	703	843	983	1123	1404	1685
2'38	212	283	425	566	708	850	991	1133	1416	1699
2'39	214	286	428	571	714	857	1000	1142	1428	1714
2'40	216	288	432	576	720	864	1008	1152	1440	1728
2'41	218	290	436	581	726	871	1016	1162	1452	1742
2'42	220	293	439	586	732	878	1025	1171	1464	1757
2'43	221	295	443	590	738	886	1035	1181	1476	1771
2'44	223	298	447	595	744	893	1042	1191	1488	1786
2'45	225	300	450	600	750	901	1050	1200	1501	1801
2'46	227	303	454	605	756	908	1059	1210	1513	1815
2'47	228	305	458	610	763	915	1068	1220	1525	1830
2'48	231	308	461	615	769	923	1076	1230	1538	1845
2'49	232	310	465	620	775	930	1085	1240	1550	1860
2'50	234	312	469	625	781	937	1094	1250	1563	1875

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
2'51	286	315	472	680	787	945	1103	1260	1575	1890
2'52	298	318	476	685	794	953	1111	1270	1588	1905
2'53	240	320	480	640	800	950	1120	1280	1600	1920
2'54	242	323	484	645	806	958	1129	1290	1613	1935
2'55	244	325	488	650	813	976	1138	1300	1626	1951
2'56	246	328	492	655	819	983	1147	1311	1638	1966
2'57	248	330	495	660	826	991	1156	1321	1651	1981
2'58	250	333	499	666	832	998	1165	1331	1664	1997
2'59	252	335	503	671	839	1006	1174	1342	1677	2012
2'60	253	338	507	676	845	1014	1183	1352	1690	2028
2'61	255	341	511	681	851	1022	1192	1362	1703	2044
2'62	257	343	514	686	857	1030	1200	1373	1714	2059
2'63	259	346	519	692	865	1038	1210	1383	1729	2075
2'64	261	348	523	697	871	1045	1220	1394	1743	2091
2'65	263	351	527	702	878	1054	1229	1404	1756	2107
2'66	264	354	531	708	884	1061	1238	1415	1769	2123
2'67	267	356	535	713	891	1069	1248	1428	1782	2139
2'68	269	359	539	718	898	1077	1257	1436	1796	2155
2'69	271	362	543	724	904	1085	1266	1447	1809	2171
2'70	273	364	547	729	911	1093	1276	1458	1822	2187
2'71	275	367	551	734	918	1102	1285	1469	1836	2203
2'72	277	370	555	740	925	1110	1295	1480	1850	2220
2'73	279	373	559	745	932	1118	1304	1491	1863	2236
2'74	282	375	563	751	938	1126	1314	1502	1877	2252
2'75	284	378	567	756	945	1135	1323	1512	1891	2269
2'76	286	381	571	762	952	1143	1333	1524	1904	2285
2'77	288	384	575	767	959	1151	1343	1535	1918	2302
2'78	290	386	580	773	966	1159	1352	1546	1932	2319
2'79	292	389	584	778	973	1168	1362	1557	1946	2335
2'80	294	392	588	784	980	1174	1372	1568	1960	2353
2'81	296	395	592	790	987	1184	1382	1579	1974	2369
2'82	298	398	596	795	994	1193	1392	1590	1988	2386
2'83	300	400	601	801	1001	1201	1402	1603	2003	2403
2'84	302	403	605	807	1008	1210	1411	1613	2016	2420
2'85	305	405	609	812	1015	1219	1421	1624	2031	2437
2'86	308	409	613	818	1022	1227	1431	1636	2046	2454
2'87	310	412	618	824	1030	1236	1441	1646	2059	2471
2'88	311	415	622	829	1037	1244	1452	1659	2074	2488
2'89	313	418	626	835	1044	1253	1462	1670	2088	2506
2'90	315	420	631	841	1051	1261	1472	1682	2102	2523
2'91	318	423	635	847	1058	1270	1482	1694	2117	2540
2'92	320	426	639	853	1066	1279	1493	1705	2132	2558
2'93	323	429	644	858	1073	1288	1502	1717	2146	2575
2'94	324	432	648	864	1080	1297	1513	1729	2161	2593
2'95	326	435	653	870	1088	1306	1523	1740	2176	2611
2'96	330	438	657	876	1095	1314	1533	1752	2190	2628
2'97	332	441	662	882	1103	1323	1544	1764	2205	2646
2'98	333	444	666	888	1110	1332	1554	1776	2220	2664
2'99	335	447	670	894	1117	1341	1565	1788	2235	2682
3'00	336	450	675	900	1125	1350	1575	1800	2250	2700

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	2:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
3-01	840	483	679	906	1182	1359	1586	1812	2265	2718
3-02	842	486	684	912	1140	1368	1596	1824	2380	2736
3-03	844	489	689	918	1148	1377	1607	1836	2395	2754
3-04	847	492	693	924	1155	1386	1617	1848	2410	2772
3-05	849	495	698	930	1163	1396	1628	1860	2326	2791
3-06	851	498	702	936	1170	1405	1639	1873	2341	2809
3-07	853	501	707	942	1178	1414	1649	1885	2356	2827
3-08	856	504	711	949	1186	1425	1660	1897	2372	2846
3-09	858	507	716	955	1193	1432	1671	1910	2387	2864
3-10	860	510	721	961	1201	1441	1682	1922	2402	2883
3-11	863	513	725	967	1209	1451	1693	1934	2418	2902
3-12	865	516	730	973	1217	1460	1704	1947	2434	2920
3-13	867	519	735	980	1225	1470	1714	1959	2449	2939
3-14	870	522	739	986	1233	1479	1725	1972	2465	2958
3-15	872	525	744	992	1240	1488	1736	1984	2481	2977
3-16	874	528	748	999	1249	1498	1747	1997	2498	2996
3-17	877	531	754	1005	1256	1507	1759	2010	2512	3015
3-18	879	534	758	1011	1264	1517	1770	2022	2528	3034
3-19	882	537	763	1018	1273	1526	1781	2035	2544	3053
3-20	884	540	768	1024	1280	1536	1792	2048	2560	3072
3-21	886	543	773	1030	1288	1546	1803	2061	2576	3091
3-22	889	546	778	1037	1296	1555	1814	2074	2592	3111
3-23	891	549	782	1043	1304	1566	1826	2087	2608	3130
3-24	894	552	787	1050	1312	1575	1837	2100	2624	3149
3-25	896	555	792	1056	1320	1584	1848	2112	2641	3169
3-26	899	558	797	1063	1328	1594	1860	2124	2657	3188
3-27	901	561	802	1069	1337	1604	1871	2139	2673	3208
3-28	903	564	807	1076	1345	1614	1883	2152	2690	3228
3-29	906	567	812	1083	1353	1624	1894	2165	2706	3247
3-30	908	570	817	1089	1361	1633	1906	2178	2722	3267
3-31	911	573	822	1096	1369	1643	1917	2191	2739	3287
3-32	913	576	827	1102	1378	1653	1929	2204	2756	3307
3-33	916	579	832	1109	1386	1663	1941	2218	2772	3327
3-34	918	582	837	1116	1394	1673	1952	2231	2789	3346
3-35	921	585	842	1123	1403	1683	1964	2244	2806	3367
3-36	923	588	847	1129	1411	1693	1976	2258	2822	3387
3-37	926	591	852	1136	1420	1704	1987	2271	2839	3407
3-38	928	594	857	1142	1428	1714	1999	2285	2856	3427
3-39	931	597	862	1149	1436	1723	2011	2298	2873	3447
3-40	933	600	867	1156	1445	1734	2023	2312	2890	3468
3-41	936	603	872	1163	1453	1744	2035	2326	2907	3488
3-42	939	606	877	1170	1462	1754	2047	2339	2924	3509
3-43	941	609	882	1176	1471	1765	2059	2353	2941	3529
3-44	944	612	888	1183	1479	1775	2071	2367	2958	3550
3-45	946	615	893	1190	1488	1785	2083	2380	2976	3571
3-46	949	618	898	1197	1496	1795	2095	2394	2993	3591
3-47	952	621	903	1204	1505	1806	2107	2408	3010	3612
3-48	954	624	908	1211	1514	1817	2119	2422	3028	3633
3-49	957	627	913	1218	1522	1827	2132	2436	3046	3654
3-50	959	630	919	1225	1531	1837	2144	2450	3062	3675

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
3.51	462	616	921	1232	1540	1848	2156	2464	3080	3696
3.52	465	620	929	1239	1549	1859	2168	2478	3098	3717
3.53	467	623	935	1248	1558	1869	2181	2492	3118	3738
3.54	470	627	940	1253	1566	1880	2193	2506	3138	3759
3.55	473	630	945	1260	1575	1890	2205	2520	3151	3781
3.56	475	634	951	1267	1584	1901	2218	2535	3168	3802
3.57	478	637	956	1274	1593	1912	2230	2549	3186	3823
3.58	481	641	961	1282	1602	1922	2243	2565	3204	3845
3.59	483	644	967	1289	1611	1933	2255	2578	3222	3866
3.60	486	648	972	1296	1620	1944	2268	2592	3240	3888
3.61	489	652	977	1303	1629	1955	2280	2606	3258	3910
3.62	491	655	983	1310	1638	1966	2293	2621	3276	3931
3.63	494	659	988	1318	1647	1977	2306	2635	3294	3953
3.64	497	662	994	1325	1656	1987	2319	2650	3312	3975
3.65	500	666	999	1332	1665	1998	2331	2664	3331	3997
3.66	502	670	1005	1340	1674	2009	2344	2679	3349	4019
3.67	505	673	1010	1347	1684	2020	2357	2694	3367	4041
3.68	508	677	1016	1354	1693	2030	2370	2708	3386	4061
3.69	511	681	1021	1362	1702	2042	2383	2723	3404	4085
3.70	513	684	1027	1369	1711	2053	2396	2738	3422	4107
3.71	516	688	1032	1376	1720	2065	2409	2753	3441	4129
3.72	519	692	1038	1384	1730	2076	2422	2768	3460	4152
3.73	522	696	1043	1391	1739	2087	2435	2783	3478	4174
3.74	525	699	1049	1399	1748	2098	2448	2798	3497	4196
3.75	527	702	1055	1406	1757	2109	2461	2812	3514	4219
3.76	530	707	1060	1414	1767	2121	2474	2828	3534	4241
3.77	533	711	1066	1421	1777	2132	2487	2843	3553	4264
3.78	536	714	1072	1429	1786	2143	2500	2858	3572	4287
3.79	538	718	1077	1436	1795	2155	2514	2873	3591	4309
3.80	541	722	1083	1444	1805	2166	2527	2888	3610	4332
3.81	544	726	1089	1452	1814	2177	2540	2903	3629	4355
3.82	547	730	1094	1459	1824	2189	2554	2918	3648	4377
3.83	550	733	1100	1467	1834	2200	2567	2934	3667	4401
3.84	553	737	1106	1475	1843	2212	2580	2949	3686	4424
3.85	556	741	1112	1483	1853	2223	2594	2964	3706	4447
3.86	559	745	1117	1490	1862	2235	2607	2979	3725	4470
3.87	562	749	1123	1498	1872	2247	2621	2995	3744	4493
3.88	565	753	1129	1505	1882	2258	2635	3011	3764	4516
3.89	567	757	1135	1513	1891	2270	2648	3026	3783	4540
3.90	570	760	1141	1521	1901	2281	2662	3042	3802	4563
3.91	573	764	1147	1529	1911	2293	2675	3058	3822	4586
3.92	576	768	1152	1537	1921	2305	2689	3073	3842	4610
3.93	579	772	1158	1544	1931	2317	2703	3089	3861	4633
3.94	582	776	1164	1552	1940	2329	2717	3105	3881	4657
3.95	585	780	1170	1560	1950	2340	2730	3120	3901	4681
3.96	588	784	1176	1568	1960	2352	2744	3136	3920	4704
3.97	591	788	1182	1576	1970	2364	2758	3153	3940	4728
3.98	594	792	1188	1584	1980	2376	2772	3168	3960	4752
3.99	597	796	1194	1592	1990	2388	2786	3184	3980	4776
4.00	600	800	1200	1600	2000	2400	2800	3200	4000	4800

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	2 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
4·01	608	804	1206	1608	2010	2412	2814	3216	4090	4824
4·02	606	808	1212	1616	2020	2424	2828	3232	4040	4848
4·03	609	812	1218	1624	2030	2436	2842	3248	4060	4872
4·04	612	816	1224	1632	2040	2448	2856	3264	4080	4896
4·05	615	820	1230	1640	2050	2460	2870	3280	4101	4921
4·06	618	824	1236	1648	2060	2473	2885	3297	4121	4945
4·07	621	828	1242	1656	2070	2485	2899	3318	4141	4969
4·08	624	832	1248	1665	2080	2497	2913	3339	4162	4994
4·09	627	836	1255	1673	2091	2509	2927	3346	4182	5018
4·10	630	840	1261	1681	2101	2521	2942	3362	4202	5043
4·11	633	845	1267	1689	2111	2534	2956	3378	4223	5068
4·12	637	849	1275	1697	2121	2546	2970	3395	4244	5092
4·13	640	853	1279	1706	2132	2559	2985	3411	4264	5117
4·14	643	857	1285	1714	2142	2571	2999	3428	4285	5142
4·15	646	861	1292	1722	2153	2583	3013	3444	4306	5167
4·16	649	865	1298	1731	2163	2596	3028	3461	4326	5193
4·17	652	869	1304	1739	2173	2608	3043	3478	4347	5217
4·18	655	874	1310	1747	2184	2621	3058	3494	4368	5242
4·19	658	878	1317	1756	2194	2633	3072	3511	4389	5267
4·20	661	882	1323	1764	2205	2646	3087	3528	4410	5292
4·21	665	886	1329	1772	2215	2659	3101	3545	4431	5317
4·22	668	890	1336	1781	2226	2671	3116	3562	4452	5343
4·23	671	895	1342	1789	2236	2684	3131	3579	4473	5368
4·24	674	899	1348	1798	2247	2697	3146	3595	4494	5393
4·25	677	903	1355	1806	2258	2709	3161	3612	4516	5419
4·26	680	907	1361	1815	2268	2722	3176	3629	4537	5444
4·27	684	912	1367	1823	2279	2735	3191	3647	4558	5470
4·28	687	916	1374	1832	2289	2748	3206	3664	4580	5496
4·29	690	920	1380	1840	2300	2761	3221	3681	4601	5521
4·30	693	924	1387	1849	2311	2773	3236	3698	4622	5547
4·31	697	929	1393	1858	2322	2786	3251	3715	4644	5573
4·32	700	933	1400	1866	2333	2799	3266	3732	4666	5599
4·33	703	937	1406	1875	2344	2812	3281	3750	4687	5625
4·34	706	942	1413	1884	2354	2825	3296	3767	4709	5651
4·35	710	946	1419	1892	2365	2838	3311	3784	4731	5677
4·36	713	950	1426	1901	2375	2851	3327	3802	4752	5703
4·37	716	955	1432	1910	2387	2865	3342	3819	4774	5729
4·38	719	959	1439	1918	2398	2878	3357	3837	4796	5755
4·39	723	964	1445	1927	2409	2891	3373	3854	4818	5783
4·40	726	968	1452	1936	2420	2904	3388	3879	4840	5808
4·41	729	972	1459	1945	2431	2917	3403	3890	4862	5834
4·42	733	977	1465	1954	2442	2930	3419	3907	4884	5861
4·43	736	981	1471	1962	2453	2944	3434	3924	4906	5887
4·44	739	986	1479	1971	2464	2957	3450	3942	4928	5914
4·45	743	990	1485	1980	2475	2970	3465	3960	4951	5941
4·46	746	995	1492	1989	2486	2984	3481	3978	4973	5967
4·47	749	999	1499	1998	2498	2997	3497	3996	4995	5994
4·48	753	1004	1505	2007	2509	3011	3512	4014	5017	6021
4·49	756	1008	1512	2016	2520	3024	3528	4032	5040	6048
4·50	759	1012	1519	2025	2531	3037	3544	4050	5062	6075

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
4.51	763	1017	1525	2084	2642	3051	3559	4068	5085	6102
4.52	766	1022	1532	2093	2654	3065	3575	4086	5108	6129
4.53	770	1026	1539	2102	2666	3078	3591	4104	5130	6156
4.54	773	1031	1546	2111	2678	3092	3607	4122	5152	6183
4.55	776	1035	1553	2120	2688	3115	3623	4140	5176	6231
4.56	780	1040	1560	2129	2699	3119	3639	4159	5198	6238
4.57	783	1044	1566	2138	2711	3133	3655	4177	5221	6265
4.58	787	1049	1573	2147	2722	3146	3671	4195	5244	6293
4.59	790	1053	1580	2157	2733	3160	3687	4214	5267	6320
4.60	793	1058	1587	2166	2745	3174	3703	4232	5290	6348
4.61	797	1063	1594	2175	2756	3188	3719	4250	5313	6376
4.62	800	1068	1601	2184	2768	3202	3735	4269	5336	6403
4.63	804	1072	1608	2193	2779	3216	3751	4287	5359	6431
4.64	807	1076	1615	2202	2791	3229	3768	4306	5382	6459
4.65	811	1081	1622	2211	2802	3243	3784	4324	5406	6487
4.66	814	1086	1629	2220	2814	3257	3800	4343	5428	6515
4.67	818	1090	1636	2229	2825	3271	3817	4362	5452	6543
4.68	821	1095	1643	2238	2837	3285	3833	4380	5476	6571
4.69	825	1100	1650	2247	2848	3299	3849	4399	5499	6599
4.70	828	1104	1657	2256	2860	3313	3866	4418	5522	6627
4.71	832	1109	1664	2265	2871	3328	3882	4437	5546	6655
4.72	835	1114	1671	2274	2883	3342	3899	4456	5570	6684
4.73	839	1119	1678	2283	2894	3356	3915	4475	5593	6712
4.74	843	1123	1685	2292	2906	3370	3932	4494	5617	6740
4.75	846	1128	1692	2301	2917	3384	3948	4512	5641	6769
4.76	850	1133	1699	2310	2929	3399	3965	4531	5664	6797
4.77	853	1138	1706	2319	2940	3413	3982	4551	5688	6826
4.78	857	1142	1714	2328	2952	3427	3998	4570	5712	6855
4.79	860	1147	1721	2337	2963	3442	4015	4589	5736	6883
4.80	864	1152	1728	2346	2975	3456	4032	4608	5760	6912
4.81	868	1157	1735	2355	2986	3470	4049	4627	5784	6941
4.82	871	1162	1742	2364	2998	3485	4066	4646	5808	6969
4.83	875	1166	1749	2373	3009	3499	4083	4665	5832	6999
4.84	878	1171	1757	2382	3020	3514	4099	4685	5856	7028
4.85	882	1176	1764	2391	3032	3528	4116	4704	5881	7057
4.86	886	1181	1771	2400	3043	3543	4133	4724	5905	7086
4.87	889	1186	1779	2409	3055	3558	4150	4743	5929	7115
4.88	893	1191	1786	2418	3067	3572	4168	4763	5954	7144
4.89	897	1196	1793	2427	3078	3587	4185	4783	5978	7174
4.90	900	1200	1801	2436	3090	3601	4202	4803	6002	7203
4.91	904	1205	1808	2445	3101	3616	4219	4822	6027	7232
4.92	908	1210	1815	2454	3113	3631	4235	4841	6052	7262
4.93	911	1215	1823	2463	3124	3646	4253	4861	6076	7291
4.94	915	1220	1830	2472	3136	3660	4271	4881	6101	7321
4.95	919	1225	1838	2481	3147	3675	4288	4900	6126	7351
4.96	923	1230	1845	2490	3159	3690	4305	4920	6150	7380
4.97	926	1235	1853	2499	3170	3705	4323	4940	6175	7410
4.98	930	1240	1860	2508	3182	3720	4340	4960	6200	7440
4.99	934	1245	1867	2517	3193	3735	4358	4980	6225	7470
5.00	937	1250	1875	2526	3205	3750	4375	5000	6250	7500

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
5'01	941	1255	1882	2610	3137	3765	4397	5020	5675	7530
5'02	945	1260	1890	2620	3150	3780	4410	5040	5700	7560
5'03	949	1265	1898	2630	3163	3795	4427	5060	5725	7590
5'04	953	1270	1905	2640	3175	3810	4445	5080	5750	7620
5'05	956	1275	1913	2650	3188	3825	4463	5100	5775	7651
5'06	960	1280	1920	2660	3200	3841	4481	5121	5801	7681
5'07	964	1285	1928	2670	3213	3856	4498	5141	5826	7711
5'08	968	1290	1935	2681	3226	3871	4516	5161	5852	7742
5'09	972	1295	1943	2691	3238	3886	4534	5182	5877	7772
5'10	975	1300	1951	2701	3251	3901	4552	5202	5902	7803
5'11	979	1306	1958	2711	3264	3917	4570	5222	5928	7834
5'12	983	1311	1966	2721	3277	3932	4588	5243	5954	7864
5'13	987	1316	1974	2732	3290	3948	4595	5263	5979	7895
5'14	991	1321	1981	2742	3302	3963	4623	5284	6005	7926
5'15	995	1326	1989	2752	3315	3978	4641	5304	6031	7957
5'16	998	1331	1997	2763	3328	3994	4659	5325	6056	7988
5'17	1002	1336	2005	2773	3341	4009	4678	5346	6082	8019
5'18	1006	1342	2012	2784	3354	4025	4696	5366	6108	8050
5'19	1010	1347	2020	2794	3367	4039	4714	5387	6134	8079
5'20	1014	1352	2028	2804	3380	4056	4732	5408	6160	8112
5'21	1018	1357	2036	2814	3393	4072	4750	5429	6186	8143
5'22	1020	1362	2044	2825	3406	4087	4768	5450	6212	8175
5'23	1026	1368	2051	2835	3419	4103	4787	5471	6238	8206
5'24	1030	1373	2059	2846	3432	4119	4805	5492	6264	8237
5'25	1034	1378	2067	2856	3445	4134	4823	5512	6291	8269
5'26	1038	1383	2075	2867	3458	4150	4842	5534	6317	8300
5'27	1041	1389	2083	2877	3472	4166	4860	5555	6343	8332
5'28	1045	1394	2091	2888	3485	4182	4879	5576	6370	8364
5'29	1049	1399	2099	2898	3498	4198	4897	5597	6396	8395
5'30	1053	1404	2107	2909	3511	4215	4916	5618	6422	8427
5'31	1057	1410	2115	2920	3524	4229	4934	5639	6449	8459
5'32	1061	1415	2123	2930	3538	4245	4953	5660	6476	8491
5'33	1065	1420	2131	2941	3551	4261	4972	5682	6502	8523
5'34	1069	1426	2139	2952	3564	4277	4990	5703	6529	8555
5'35	1073	1431	2147	2963	3578	4293	5009	5724	6556	8587
5'36	1077	1436	2155	2973	3591	4309	5028	5746	6582	8619
5'37	1080	1442	2163	2984	3605	4326	5046	5767	6609	8651
5'38	1085	1447	2171	2994	3618	4342	5065	5789	6636	8683
5'39	1089	1453	2179	3005	3631	4358	5084	5810	6663	8715
5'40	1093	1458	2187	3016	3645	4374	5103	5832	6690	8748
5'41	1098	1463	2195	3027	3658	4390	5122	5854	6717	8780
5'42	1102	1469	2203	3038	3672	4406	5141	5875	6744	8812
5'43	1106	1474	2211	3048	3686	4423	5160	5897	6771	8845
5'44	1110	1480	2220	3059	3699	4439	5179	5919	6798	8878
5'45	1114	1485	2228	3070	3713	4455	5198	5940	6826	8911
5'46	1118	1491	2236	3081	3726	4472	5217	5962	6853	8945
5'47	1122	1496	2244	3092	3740	4488	5236	5984	6880	8978
5'48	1126	1502	2252	3103	3754	4505	5255	6006	6908	9009
5'49	1130	1507	2260	3114	3767	4521	5275	6028	6936	9042
5'50	1134	1513	2269	3125	3781	4537	5294	6050	6963	9075

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in feet	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
5-51	1138	1518	2277	3086	3795	4554	5313	6073	7590	9108
5-52	1143	1524	2285	3047	3809	4571	5332	6094	7618	9141
5-53	1147	1529	2291	3058	3823	4587	5352	6116	7645	9174
5-54	1151	1535	2302	3069	3836	4604	5371	6138	7673	9207
5-55	1155	1540	2310	3080	3850	4620	5390	6160	7701	9231
5-56	1159	1546	2319	3091	3864	4637	5410	6183	7728	9274
5-57	1163	1551	2327	3102	3878	4654	5429	6205	7756	9307
5-58	1168	1557	2336	3114	3893	4670	5449	6227	7781	9341
5-59	1172	1562	2344	3125	3906	4687	5468	6250	7812	9374
5-60	1176	1568	2353	3136	3920	4704	5488	6272	7840	9408
5-61	1180	1574	2360	3147	3934	4721	5508	6294	7868	9442
5-62	1184	1579	2369	3158	3948	4738	5527	6317	7896	9476
5-63	1189	1585	2377	3170	3962	4755	5547	6339	7921	9509
5-64	1193	1590	2386	3181	3976	4771	5567	6363	7952	9542
5-65	1197	1596	2394	3192	3990	4788	5586	6384	7981	9577
5-66	1201	1602	2403	3204	4004	4805	5606	6407	8009	9611
5-67	1206	1607	2411	3215	4019	4822	5626	6429	8037	9645
5-68	1210	1613	2420	3226	4033	4839	5645	6452	8066	9679
5-69	1214	1619	2428	3237	4047	4853	5665	6478	8094	9707
5-70	1218	1624	2437	3249	4061	4873	5686	6498	8122	9747
5-71	1223	1630	2445	3260	4075	4891	5708	6521	8151	9781
5-72	1227	1636	2454	3272	4090	4907	5726	6544	8180	9816
5-73	1231	1642	2462	3283	4104	4925	5746	6567	8208	9850
5-74	1236	1647	2471	3295	4118	4944	5766	6590	8237	9894
5-75	1240	1653	2480	3306	4133	4959	5786	6612	8266	9919
5-76	1244	1659	2488	3318	4147	4977	5806	6636	8294	9953
5-77	1248	1665	2497	3329	4162	4994	5826	6659	8333	9998
5-78	1253	1670	2506	3341	4176	5011	5846	6683	8362	10023
5-79	1257	1676	2514	3352	4190	5029	5867	6706	8391	10057
5-80	1261	1683	2523	3364	4205	5046	5887	6728	8410	10092
5-81	1266	1688	2532	3376	4219	5063	5907	6751	8439	10127
5-82	1270	1694	2540	3387	4234	5081	5928	6775	8468	10162
5-83	1275	1699	2549	3399	4248	5098	5948	6798	8497	10196
5-84	1279	1705	2558	3411	4263	5116	5968	6821	8526	10232
5-85	1283	1711	2567	3423	4278	5133	5989	6844	8556	10267
5-86	1287	1717	2575	3434	4292	5151	6009	6868	8584	10303
5-87	1292	1723	2584	3446	4307	5169	6030	6891	8614	10337
5-88	1297	1729	2593	3457	4322	5186	6051	6915	8644	10373
5-89	1301	1735	2602	3469	4336	5204	6071	6938	8671	10408
5-90	1305	1740	2611	3481	4351	5221	6092	6962	8702	10443
5-91	1310	1746	2620	3493	4366	5239	6112	6986	8732	10478
5-92	1314	1753	2628	3505	4381	5257	6133	7009	8762	10514
5-93	1319	1758	2637	3516	4396	5275	6154	7033	8791	10549
5-94	1323	1764	2646	3528	4410	5293	6175	7057	8821	10585
5-95	1328	1770	2655	3540	4425	5310	6196	7080	8851	10621
5-96	1332	1776	2664	3552	4440	5328	6216	7104	8880	10656
5-97	1337	1782	2673	3564	4455	5346	6237	7128	8910	10693
5-98	1341	1788	2682	3576	4470	5364	6258	7152	8940	10729
5-99	1345	1794	2691	3588	4485	5382	6279	7176	8970	10764
5-100	1350	1800	2700	3600	4500	5400	6300	7200	9000	10800

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet	4 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
6'01	1854	1806	2709	8612	4815	5418	6821	7224	9080	10836
6'02	1869	1812	2718	8624	4830	5436	6842	7248	9096	10872
6'03	1864	1818	2727	8636	4845	5454	6853	7272	9090	10908
6'04	1868	1824	2736	8648	4860	5472	6864	7296	9120	10944
6'05	1878	1830	2745	8660	4875	5490	6905	7320	9151	10981
6'06	1877	1836	2754	8672	4890	5509	6927	7345	9181	11017
6'07	1882	1842	2763	8684	4906	5527	6948	7369	9211	11053
6'08	1886	1848	2772	8697	4921	5545	6969	7393	9242	11090
6'09	1891	1854	2782	8709	4936	5563	6990	7418	9272	11126
6'10	1896	1860	2791	8721	4951	5581	7012	7442	9302	11163
6'11	1400	1867	2800	8733	4966	5599	7033	7466	9335	11199
6'12	1405	1873	2809	8745	4982	5618	7055	7491	9364	11236
6'13	1409	1879	2818	8758	4997	5637	7076	7515	9394	11273
6'14	1414	1885	2827	8770	5012	5655	7097	7540	9425	11310
6'15	1418	1891	2837	8782	5028	5673	7119	7564	9456	11347
6'16	1423	1897	2846	8795	5043	5692	7140	7589	9486	11384
6'17	1428	1903	2855	8807	5059	5710	7162	7614	9517	11421
6'18	1432	1910	2864	8819	5074	5729	7183	7638	9548	11458
6'19	1437	1916	2874	8832	5089	5747	7205	7663	9579	11495
6'20	1440	1922	2885	8844	5105	5766	7227	7688	9610	11532
6'21	1446	1928	2892	8856	5120	5785	7249	7713	9641	11569
6'22	1451	1934	2902	8869	5136	5803	7270	7738	9672	11607
6'23	1455	1941	2911	8881	5152	5822	7292	7763	9703	11644
6'24	1460	1947	2920	8894	5167	5841	7313	7788	9734	11681
6'25	1465	1953	2930	8906	5183	5859	7335	7812	9765	11719
6'26	1470	1959	2939	8919	5198	5878	7356	7838	9797	11756
6'27	1474	1966	2948	8931	5214	5897	7378	7863	9828	11794
6'28	1479	1972	2958	8944	5230	5916	7399	7888	9860	11832
6'29	1484	1978	2967	8956	5245	5935	7421	7913	9891	11869
6'30	1488	1984	2977	8969	5261	5953	7442	7938	9922	11907
6'31	1493	1991	2986	8982	5277	5972	7464	7963	9954	11945
6'32	1498	1997	2996	8994	5293	5991	7485	7988	9986	11983
6'33	1503	2003	3005	9007	5309	6010	7507	8014	10017	12021
6'34	1507	2010	3015	9020	5324	6029	7528	8039	10049	12059
6'35	1512	2016	3024	9032	5340	6048	7550	8064	10081	12097
6'36	1517	2022	3034	9045	5356	6067	7571	8090	10113	12135
6'37	1522	2029	3043	9058	5372	6087	7593	8115	10144	12173
6'38	1526	2036	3053	9070	5388	6106	7614	8141	10176	12211
6'39	1531	2042	3062	9083	5404	6125	7636	8166	10208	12249
6'40	1536	2048	3072	9096	5420	6144	7657	8192	10240	12286
6'41	1541	2054	3082	9109	5436	6163	7679	8218	10272	12324
6'42	1546	2061	3091	9122	5452	6182	7700	8243	10304	12362
6'43	1550	2067	3101	9135	5468	6202	7722	8270	10336	12400
6'44	1555	2074	3111	9147	5484	6221	7743	8295	10368	12438
6'45	1560	2080	3120	9160	5500	6240	7765	8320	10401	12476
6'46	1565	2087	3130	9173	5516	6260	7786	8346	10433	12514
6'47	1570	2093	3140	9186	5532	6279	7808	8372	10465	12552
6'48	1575	2100	3149	9199	5549	6299	7829	8398	10498	12590
6'49	1580	2106	3159	9212	5565	6318	7851	8424	10530	12628
6'50	1585	2113	3169	9225	5581	6337	7872	8450	10563	12666

TABLE JI.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet,	4 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
6-51	1589	2119	8178	4238	5297	6857	7417	8476	10595	12714
6-52	1594	2126	8188	4251	5314	6877	7429	8502	10628	12753
6-53	1599	2132	8198	4264	5330	6896	7442	8528	10660	12792
6-54	1604	2139	8208	4277	5348	6916	7455	8554	10697	12831
6-55	1609	2146	8218	4290	5363	6935	7468	8580	10736	12871
6-56	1614	2152	8228	4303	5379	6955	7481	8607	10768	12910
6-57	1619	2158	8237	4316	5396	6975	7494	8633	10791	12946
6-58	1624	2165	8247	4330	5412	6994	7507	8659	10824	12989
6-59	1629	2171	8257	4343	5428	7014	7520	8686	10857	13028
6-60	1633	2178	8267	4356	5445	7034	7533	8712	10890	13068
6-61	1638	2185	8277	4369	5461	7054	7546	8738	10923	13108
6-62	1643	2191	8287	4382	5478	7074	7559	8765	10956	13147
6-63	1648	2198	8297	4396	5494	7094	7572	8791	10989	13187
6-64	1653	2204	8307	4409	5511	7114	7585	8818	11023	13227
6-65	1658	2211	8317	4422	5528	7134	7598	8844	11056	13267
6-66	1663	2218	8327	4436	5544	7154	7611	8871	11089	13307
6-67	1668	2224	8337	4449	5561	7174	7624	8898	11122	13347
6-68	1673	2230	8347	4460	5577	7194	7637	8920	11154	13387
6-69	1678	2238	8357	4476	5594	7214	7650	8947	11189	13427
6-70	1683	2244	8367	4489	5611	7234	7663	8978	11222	13467
6-71	1688	2251	8377	4502	5628	7254	7676	9005	11256	13507
6-72	1693	2258	8387	4516	5646	7274	7689	9032	11290	13548
6-73	1698	2265	8397	4529	5662	7294	7702	9059	11323	13588
6-74	1704	2271	8407	4543	5678	7314	7715	9086	11357	13628
6-75	1709	2278	8417	4556	5695	7334	7728	9112	11391	13669
6-76	1714	2285	8427	4570	5712	7354	7741	9140	11424	13709
6-77	1719	2292	8437	4583	5729	7374	7754	9167	11458	13750
6-78	1724	2298	8448	4597	5746	7394	7767	9194	11492	13791
6-79	1729	2305	8458	4610	5763	7414	7780	9221	11526	13831
6-80	1734	2312	8468	4624	5780	7434	7793	9248	11560	13872
6-81	1739	2319	8478	4638	5797	7454	7806	9275	11594	13913
6-82	1744	2326	8488	4651	5814	7474	7819	9302	11628	13954
6-83	1749	2332	8499	4665	5831	7494	7832	9330	11662	13995
6-84	1755	2339	8509	4679	5848	7514	7845	9357	11696	14036
6-85	1760	2346	8519	4692	5865	7534	7858	9384	11731	14077
6-86	1765	2353	8529	4706	5882	7554	7871	9412	11765	14118
6-87	1770	2360	8540	4720	5900	7574	7884	9439	11799	14159
6-88	1775	2367	8550	4733	5917	7594	7897	9467	11834	14200
6-89	1780	2374	8560	4747	5934	7614	7910	9494	11868	14242
6-90	1785	2380	8571	4761	5951	7634	7923	9522	11903	14283
6-91	1791	2387	8581	4775	5968	7654	7936	9550	11937	14324
6-92	1796	2394	8591	4789	5986	7674	7949	9577	11972	14365
6-93	1801	2401	8602	4802	6003	7694	7962	9605	12006	14407
6-94	1806	2408	8612	4816	6020	7714	7975	9633	12041	14448
6-95	1811	2415	8623	4830	6038	7734	7988	9660	12076	14491
6-96	1817	2422	8633	4844	6055	7754	7999	9688	12110	14532
6-97	1822	2429	8644	4858	6073	7774	8012	9716	12145	14574
6-98	1827	2436	8654	4873	6090	7794	8025	9744	12180	14615
6-99	1833	2443	8664	4886	6107	7814	8038	9772	12215	14658
7-00	1837	2450	8675	4900	6125	7834	8051	9800	12250	14700

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
7-01	1843	2467	8685	4914	6142	7871	8600	9828	12285	14742
7-02	1848	2464	8696	4928	6160	7892	8624	9856	12320	14784
7-03	1853	2471	8707	4942	6178	7913	8649	9884	12355	14826
7-04	1859	2478	8717	4956	6195	7934	8676	9912	12390	14868
7-05	1864	2485	8728	4970	6213	7955	8698	9940	12426	14911
7-06	1869	2492	8738	4984	6230	7977	8728	9969	12461	14953
7-07	1874	2499	8749	4998	6248	7998	8747	9997	12496	14995
7-08	1880	2506	8759	5012	6266	7919	8773	10025	12532	15038
7-09	1885	2513	8770	5027	6283	7940	8797	10054	12567	15080
7-10	1890	2520	8781	5041	6301	7961	8822	10082	12602	15122
7-11	1896	2528	8791	5055	6319	7982	8847	10110	12638	15166
7-12	1901	2535	8802	5069	6337	7994	8872	10139	12674	15208
7-13	1906	2542	8813	5084	6355	7996	8896	10167	12709	15251
7-14	1912	2549	8823	5098	6372	7997	8921	10196	12745	15294
7-15	1917	2556	8834	5112	6390	7998	8946	10224	12781	15337
7-16	1921	2563	8845	5127	6408	7999	8971	10253	12816	15380
7-17	1928	2570	8856	5141	6426	7999	8997	10282	12852	15422
7-18	1933	2578	8866	5155	6444	7999	9022	10310	12888	15464
7-19	1939	2585	8877	5170	6462	7999	9047	10339	12924	15509
7-20	1944	2592	8888	5184	6480	7999	9072	10368	12960	15552
7-21	1949	2599	8899	5198	6498	7999	9097	10397	12996	15594
7-22	1955	2606	8910	5213	6516	7999	9122	10426	13032	15639
7-23	1960	2614	8920	5227	6534	7999	9148	10455	13068	15682
7-24	1966	2621	8931	5242	6553	7999	9173	10484	13104	15725
7-25	1971	2628	8942	5256	6570	7999	9198	10512	13141	15769
7-26	1977	2635	8953	5271	6588	7999	9224	10542	13177	15812
7-27	1982	2643	8964	5285	6607	7999	9249	10571	13213	15856
7-28	1987	2650	8975	5300	6625	7999	9275	10600	13250	15900
7-29	1992	2657	8986	5314	6643	7999	9300	10629	13286	15943
7-30	1998	2664	8997	5329	6661	7999	9325	10658	13322	15987
7-31	2004	2672	9008	5344	6679	8018	9351	10687	13359	16031
7-32	2009	2679	9019	5358	6698	8037	9377	10716	13396	16076
7-33	2015	2686	9030	5373	6716	8059	9402	10746	13432	16121
7-34	2020	2694	9041	5388	6734	8081	9428	10775	13469	16165
7-35	2026	2701	9052	5403	6753	8103	9454	10804	13506	16209
7-36	2031	2708	9063	5417	6771	8125	9480	10834	13542	16251
7-37	2037	2716	9074	5432	6790	8148	9505	10863	13579	16295
7-38	2042	2723	9085	5446	6808	8170	9531	10893	13616	16339
7-39	2048	2731	9096	5471	6826	8192	9557	10922	13653	16384
7-40	2053	2738	9107	5476	6845	8214	9583	10952	13690	16428
7-41	2059	2746	9118	5491	6863	8236	9609	10982	13727	16472
7-42	2065	2753	9129	5506	6882	8258	9635	11012	13764	16517
7-43	2070	2760	9140	5520	6901	8281	9661	11041	13801	16561
7-44	2076	2768	9152	5535	6919	8303	9687	11071	13838	16606
7-45	2081	2775	9163	5550	6938	8325	9713	11100	13876	16651
7-46	2087	2783	9174	5565	6956	8348	9739	11130	13913	16695
7-47	2092	2790	9185	5580	6975	8370	9765	11160	13950	16740
7-48	2098	2798	9196	5595	6994	8393	9791	11190	13988	16785
7-49	2103	2805	9207	5610	7012	8415	9818	11220	14026	16830
7-50	2109	2812	9218	5625	7031	8437	9844	11250	14063	16875

TABLE H.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
751	2115	2820	4330	5640	7050	8460	9870	11280	14100	16920
752	2121	2828	4241	5655	7069	8483	9896	11310	14138	16965
753	2126	2835	4253	5670	7088	8505	9923	11340	14176	17010
754	2132	2843	4264	5688	7106	8528	9949	11370	14215	17055
755	2138	2850	4275	5700	7125	8550	9975	11400	14251	17100
756	2143	2858	4287	5715	7144	8573	10002	11430	14288	17146
757	2149	2865	4298	5730	7163	8596	10028	11461	14326	17191
758	2155	2873	4309	5746	7182	8618	10055	11491	14364	17237
759	2160	2880	4321	5761	7201	8641	10081	11522	14402	17282
760	2166	2888	4332	5776	7220	8664	10108	11552	14440	17328
761	2172	2896	4348	5791	7239	8687	10135	11582	14478	17374
762	2177	2903	4355	5806	7258	8710	10161	11611	14516	17419
763	2183	2911	4366	5822	7277	8733	10188	11643	14554	17465
764	2189	2918	4378	5837	7296	8755	10215	11674	14592	17511
765	2195	2926	4389	5852	7315	8778	10241	11704	14631	17557
766	2200	2934	4401	5868	7334	8801	10268	11735	14669	17603
767	2206	2941	4413	5883	7354	8824	10295	11766	14707	17649
768	2212	2949	4424	5898	7373	8847	10322	11796	14746	17695
769	2218	2957	4435	5914	7392	8870	10349	11827	14784	17741
770	2223	2964	4447	5929	7411	8893	10376	11858	14822	17787
771	2229	2972	4458	5944	7430	8917	10403	11889	14861	17833
772	2235	2980	4470	5960	7450	8940	10430	11920	14900	17880
773	2241	2988	4482	5975	7469	8963	10457	11951	14939	17926
774	2247	2995	4495	5991	7488	8986	10484	11982	14977	17972
775	2252	3003	4506	6006	7508	9009	10511	12013	15016	18019
776	2258	3011	4518	6022	7527	9032	10538	12044	15054	18065
777	2264	3019	4528	6037	7547	9056	10565	12075	15093	18112
778	2270	3026	4540	6053	7566	9079	10592	12106	15132	18159
779	2276	3034	4551	6068	7585	9103	10620	12137	15171	18205
780	2281	3042	4563	6084	7605	9126	10647	12168	15210	18252
781	2287	3050	4575	6100	7624	9149	10674	12199	15249	18299
782	2293	3058	4586	6115	7644	9173	10703	12230	15288	18346
783	2299	3065	4598	6131	7664	9196	10729	12262	15327	18393
784	2305	3073	4610	6147	7683	9220	10756	12293	15366	18440
785	2311	3081	4622	6163	7703	9243	10784	12324	15405	18487
786	2317	3089	4633	6178	7722	9267	10811	12355	15444	18534
787	2323	3097	4645	6194	7742	9291	10839	12387	15484	18581
788	2329	3105	4657	6209	7762	9314	10867	12419	15524	18628
789	2334	3113	4669	6225	7781	9338	10894	12450	15563	18675
790	2340	3120	4680	6241	7801	9361	10923	12482	15602	18722
791	2346	3128	4693	6257	7821	9385	10949	12514	15642	18770
792	2352	3136	4704	6273	7841	9409	10977	12545	15682	18818
793	2358	3144	4716	6288	7861	9433	11005	12577	15721	18865
794	2364	3152	4728	6304	7880	9457	11033	12609	15761	18913
795	2370	3160	4740	6320	7900	9480	11060	12640	15801	18961
796	2376	3168	4752	6336	7920	9504	11088	12672	15840	19008
797	2382	3176	4764	6353	7940	9528	11116	12704	15880	19056
798	2388	3184	4776	6368	7960	9553	11144	12736	15920	19104
799	2394	3192	4788	6384	7980	9576	11173	12768	15960	19152
800	2400	3200	4800	6400	8000	9600	11200	12800	16000	19200

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
8'01	2406	3208	4812	6416	8020	9624	11228	12832	16040	19248
8'02	2412	3216	4824	6432	8040	9648	11256	12864	16080	19296
8'03	2418	3224	4836	6448	8060	9672	11284	12896	16120	19344
8'04	2424	3232	4848	6464	8080	9696	11312	12928	16161	19392
8'05	2430	3240	4860	6480	8100	9720	11340	12960	16200	19441
8'06	2436	3248	4872	6496	8120	9745	11369	12993	16241	19489
8'07	2442	3256	4884	6512	8141	9769	11397	13025	16281	19537
8'08	2448	3264	4896	6529	8161	9793	11425	13057	16322	19586
8'09	2454	3272	4909	6545	8181	9817	11453	13090	16362	19634
8'10	2460	3280	4921	6561	8201	9841	11482	13122	16402	19683
8'11	2466	3289	4933	6577	8221	9876	11510	13154	16443	19732
8'12	2473	3297	4945	6593	8242	9890	11539	13187	16484	19780
8'13	2479	3305	4957	6610	8262	9915	11567	13219	16524	19829
8'14	2485	3313	4969	6626	8283	9939	11595	13252	16565	19878
8'15	2491	3321	4982	6642	8303	9963	11624	13284	16606	19927
8'16	2497	3329	4994	6659	8323	9988	11652	13317	16646	19976
8'17	2503	3337	5006	6675	8344	10012	11681	13350	16687	20025
8'18	2509	3346	5018	6691	8364	10037	11710	13382	16728	20074
8'19	2515	3354	5031	6708	8384	10061	11738	13415	16769	20123
8'20	2521	3362	5043	6724	8405	10086	11767	13448	16810	20172
8'21	2528	3370	5055	6740	8425	10111	11796	13481	16851	20221
8'22	2534	3378	5068	6757	8446	10135	11824	13514	16892	20271
8'23	2540	3387	5080	6773	8467	10160	11853	13547	16933	20320
8'24	2546	3395	5092	6790	8487	10185	11882	13580	16974	20369
8'25	2552	3403	5105	6806	8508	10209	11911	13612	17015	20419
8'26	2559	3411	5117	6823	8528	10234	11940	13645	17057	20468
8'27	2565	3420	5129	6839	8549	10259	11969	13679	17098	20518
8'28	2571	3428	5142	6856	8570	10284	11998	13712	17140	20567
8'29	2577	3436	5154	6872	8590	10309	12027	13745	17181	20617
8'30	2583	3444	5167	6889	8611	10333	12056	13778	17223	20667
8'31	2590	3453	5179	6906	8632	10358	12085	13811	17260	20717
8'32	2596	3461	5192	6922	8653	10383	12114	13844	17306	20767
8'33	2602	3469	5204	6939	8674	10408	12143	13878	17347	20817
8'34	2608	3477	5217	6955	8694	10433	12172	13911	17389	20867
8'35	2615	3486	5229	6972	8715	10458	12201	13944	17431	20917
8'36	2621	3494	5242	6989	8736	10483	12231	13978	17472	20967
8'37	2627	3503	5254	7006	8757	10509	12260	14011	17514	21017
8'38	2633	3511	5267	7022	8778	10534	12289	14045	17556	21067
8'39	2640	3520	5279	7039	8799	10559	12319	14078	17598	21118
8'40	2646	3528	5292	7056	8820	10584	12348	14112	17640	21168
8'41	2653	3536	5305	7073	8841	10609	12376	14146	17682	21218
8'42	2659	3545	5317	7090	8862	10634	12407	14179	17724	21269
8'43	2665	3553	5330	7108	8883	10660	12436	14213	17766	21319
8'44	2671	3562	5343	7124	8904	10685	12466	14247	17808	21370
8'45	2678	3570	5355	7140	8925	10710	12495	14280	17851	21421
8'46	2684	3579	5368	7157	8946	10736	12525	14314	17893	21471
8'47	2690	3587	5381	7174	8968	10761	12555	14348	17935	21522
8'48	2697	3596	5393	7191	8989	10788	12584	14382	17978	21573
8'49	2703	3604	5406	7208	9010	10813	12614	14416	18020	21624
8'50	2709	3612	5419	7225	9031	10837	12644	14450	18062	21675

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet,	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
8'51	2716	3621	5431	7242	9052	10863	12674	14484	18106	21726
8'52	2722	3630	5444	7259	9074	10889	12703	14518	18148	21777
8'53	2729	3638	5457	7276	9095	10914	12733	14552	18190	21828
8'54	2736	3647	5470	7293	9116	10940	12763	14586	18233	21879
8'55	2741	3655	5483	7310	9138	10965	12793	14620	18276	21931
8'56	2746	3664	5496	7327	9159	10991	12823	14655	18318	21982
8'57	2754	3672	5508	7344	9181	11017	12853	14689	18361	22034
8'58	2761	3681	5521	7362	9202	11042	12883	14723	18404	22085
8'59	2767	3689	5534	7379	9223	11068	12913	14758	18447	22136
8'60	2773	3698	5547	7396	9245	11094	12943	14792	18490	22188
8'61	2780	3707	5560	7413	9266	11120	12973	14826	18533	22240
8'62	2786	3715	5573	7430	9288	11146	13003	14861	18576	22291
8'63	2793	3724	5586	7448	9310	11172	13033	14895	18619	22343
8'64	2799	3732	5599	7465	9331	11197	13064	14930	18662	22395
8'65	2806	3741	5612	7482	9353	11223	13094	14964	18706	22447
8'66	2812	3750	5625	7500	9374	11249	13124	14999	18749	22499
8'67	2819	3758	5638	7517	9396	11275	13154	15034	18792	22551
8'68	2825	3767	5651	7534	9418	11301	13185	15068	18836	22603
8'69	2832	3775	5664	7552	9439	11327	13215	15103	18879	22655
8'70	2838	3784	5676	7569	9460	11351	13245	15138	18920	22708
8'71	2845	3793	5690	7586	9483	11380	13276	15173	18966	22759
8'72	2851	3802	5703	7604	9505	11406	13307	15208	19010	22811
8'73	2858	3811	5716	7621	9527	11432	13337	15243	19053	22863
8'74	2865	3819	5729	7639	9548	11458	13368	15278	19097	22915
8'75	2871	3828	5743	7656	9570	11484	13398	15312	19141	22966
8'76	2878	3837	5755	7674	9592	11511	13429	15346	19184	23018
8'77	2884	3846	5768	7691	9614	11537	13460	15383	19228	23074
8'78	2891	3854	5782	7709	9636	11563	13490	15418	19272	23127
8'79	2897	3863	5795	7726	9658	11590	13521	15453	19316	23179
8'80	2904	3872	5808	7744	9680	11616	13552	15488	19360	23232
8'81	2911	3881	5821	7762	9702	11643	13583	15523	19404	23285
8'82	2917	3890	5834	7779	9724	11669	13614	15558	19448	23338
8'83	2924	3898	5848	7797	9746	11695	13645	15594	19492	23391
8'84	2930	3907	5861	7815	9768	11722	13675	15639	19536	23444
8'85	2937	3916	5874	7832	9790	11748	13706	15664	19581	23497
8'86	2944	3925	5887	7850	9812	11775	13737	15700	19625	23550
8'87	2950	3934	5901	7868	9835	11802	13768	15735	19669	23603
8'88	2957	3942	5914	7885	9857	11828	13800	15771	19714	23656
8'89	2964	3952	5927	7903	9879	11855	13831	15806	19758	23710
8'90	2970	3960	5941	7921	9901	11881	13862	15842	19802	23763
8'91	2977	3969	5954	7939	9923	11908	13893	15878	19847	23816
8'92	2984	3978	5967	7957	9946	11935	13924	15913	19892	23870
8'93	2990	3987	5981	7974	9968	11962	13955	15949	19936	23923
8'94	2997	3996	5994	7992	9990	11989	13987	15985	19981	23977
8'95	3004	4005	6008	8010	10013	12015	14018	16020	20026	24031
8'96	3010	4014	6021	8028	10035	12042	14049	16056	20070	24084
8'97	3017	4023	6035	8046	10058	12069	14071	16092	20115	24138
8'98	3024	4032	6048	8064	10080	12096	14112	16128	20160	24193
8'99	3031	4041	6061	8082	10102	12123	14144	16164	20205	24246
9'00	3037	4050	6075	8100	10125	12150	14175	16200	20250	24300

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
9'01	3044	4059	6088	8118	10147	12177	14207	16236	20295	24854
9'02	3051	4068	6102	8136	10170	12204	14238	16272	20840	24408
9'03	3058	4077	6116	8154	10193	12231	14270	16308	20885	24463
9'04	3066	4086	6129	8172	10215	12258	14301	16344	20930	24516
9'05	3071	4095	6143	8190	10238	12285	14333	16380	20976	24571
9'06	3078	4104	6156	8208	10260	12318	14365	16417	21021	24626
9'07	3085	4118	6170	8226	10283	12340	14396	16459	21066	24679
9'08	3092	4122	6183	8245	10306	12367	14428	16489	21061	24734
9'09	3099	4131	6197	8263	10328	12394	14460	16526	21057	24788
9'10	3106	4140	6211	8281	10351	12421	14492	16563	21052	24843
9'11	3112	4150	6224	8299	10374	12449	14524	16598	21048	24898
9'12	3119	4159	6238	8317	10397	12476	14556	16636	21044	24952
9'13	3126	4168	6252	8336	10420	12504	14587	16671	21039	25007
9'14	3133	4177	6265	8354	10442	12531	14619	16708	21036	25062
9'15	3140	4186	6279	8372	10465	12558	14651	16744	21031	25117
9'16	3146	4195	6293	8391	10488	12586	14683	16781	21027	25172
9'17	3153	4204	6307	8409	10511	12613	14716	16818	21022	25227
9'18	3160	4214	6320	8427	10534	12641	14748	16854	21018	25282
9'19	3167	4223	6334	8446	10557	12668	14780	16891	21014	25337
9'20	3174	4232	6348	8464	10580	12696	14812	16928	21010	25392
9'21	3181	4241	6362	8482	10603	12724	14844	16965	21006	25447
9'22	3188	4250	6376	8500	10626	12751	14876	17002	21002	25502
9'23	3195	4256	6389	8519	10649	12779	14909	17039	21000	25558
9'24	3202	4269	6403	8538	10672	12807	14941	17076	21004	25614
9'25	3208	4278	6417	8556	10695	12834	14973	17112	21001	25669
9'26	3216	4287	6431	8575	10718	12862	15006	17150	21007	25724
9'27	3222	4297	6446	8593	10742	12890	15038	17187	21004	25780
9'28	3229	4306	6459	8612	10765	12918	15071	17224	21001	25836
9'29	3236	4315	6473	8630	10788	12946	15103	17261	21007	25891
9'30	3243	4324	6487	8649	10811	12973	15136	17298	21002	25947
9'31	3250	4334	6501	8668	10834	13001	15168	17335	21008	26003
9'32	3257	4343	6515	8686	10858	13029	15201	17372	21014	26059
9'33	3264	4352	6529	8705	10881	13057	15234	17410	21021	26115
9'34	3271	4362	6543	8724	10904	13085	15266	17447	21027	26171
9'35	3278	4371	6557	8742	10928	13118	15299	17484	21033	26227
9'36	3285	4380	6571	8761	10951	13141	15332	17522	21039	26283
9'37	3292	4389	6586	8780	10975	13170	15364	17559	21045	26339
9'38	3299	4398	6600	8798	10998	13198	15397	17597	21051	26395
9'39	3306	4409	6613	8817	11021	13226	15430	17634	21057	26451
9'40	3313	4418	6627	8836	11045	13254	15463	17672	21062	26508
9'41	3320	4427	6641	8855	11068	13282	15496	17710	21068	26564
9'42	3328	4437	6655	8874	11092	13310	15529	17747	21074	26621
9'43	3335	4446	6669	8893	11116	13339	15562	17785	21080	26677
9'44	3342	4456	6684	8911	11139	13367	15595	17823	21086	26734
9'45	3349	4465	6698	8930	11163	13395	15628	17860	21092	26791
9'46	3356	4475	6712	8949	11186	13424	15661	17898	21098	26847
9'47	3363	4484	6726	8968	11210	13453	15694	17936	21104	26904
9'48	3370	4494	6740	8987	11234	13481	15727	17974	21110	26961
9'49	3377	4503	6754	9006	11257	13509	15761	18012	21116	27018
9'50	3384	4512	6769	9025	11281	13537	15794	18050	21122	27075

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
9'51	3391	4522	6788	9044	11805	13566	15827	18088	22610	27122
9'52	3399	4532	6797	9063	11829	13595	15860	18128	22668	27169
9'53	3406	4541	6812	9082	11858	13628	15894	18164	22703	27208
9'54	3418	4561	6826	9101	11876	13652	15927	18202	22753	27268
9'55	3420	4560	6840	9120	11400	13680	15960	18240	22801	27361
9'56	3427	4570	6855	9139	11424	13709	15991	18279	22848	27418
9'57	3434	4579	6869	9158	11448	13738	16027	18317	22896	27475
9'58	3442	4589	6883	9178	11472	13766	16061	18355	22944	27533
9'59	3449	4598	6898	9197	11496	13795	16094	18394	22992	27590
9'60	3456	4608	6912	9216	11520	13824	16128	18432	23040	27648
9'61	3468	4618	6926	9235	11544	13853	16162	18470	23088	27706
9'62	3470	4627	6941	9254	11568	13882	16195	18509	23136	27763
9'63	3478	4637	6955	9274	11592	13911	16229	18547	23184	27821
9'64	3486	4647	6970	9293	11617	13939	16263	18586	23235	27879
9'65	3492	4656	6984	9312	11640	13968	16298	18624	23281	27937
9'66	3499	4666	6999	9332	11664	13997	16330	18663	23329	27995
9'67	3507	4675	7013	9351	11689	14026	16364	18702	23377	28053
9'68	3514	4685	7028	9370	11713	14055	16398	18740	23426	28111
9'69	3521	4695	7042	9390	11737	14084	16432	18779	23474	28169
9'70	3528	4704	7057	9409	11761	14113	16466	18818	23522	28227
9'71	3536	4714	7071	9428	11785	14143	16500	18857	23571	28285
9'72	3543	4724	7086	9448	11810	14172	16534	18896	23620	28344
9'73	3550	4734	7100	9467	11834	14200	16568	18936	23668	28402
9'74	3558	4745	7116	9487	11858	14230	16602	18974	23717	28460
9'75	3565	4753	7130	9506	11883	14259	16636	19012	23765	28519
9'76	3572	4763	7144	9525	11907	14289	16670	19052	23814	28577
9'77	3579	4773	7159	9545	11932	14318	16704	19091	23863	28636
9'78	3589	4782	7174	9565	11956	14347	16738	19130	23912	28695
9'79	3594	4782	7188	9584	11980	14377	16773	19169	23961	28753
9'80	3601	4802	7203	9604	12005	14406	16807	19208	24010	28812
9'81	3609	4812	7218	9624	12029	14435	16841	19247	24059	28871
9'82	3616	4822	7233	9643	12054	14465	16876	19286	24108	28930
9'83	3624	4831	7247	9663	12079	14494	16910	19325	24157	28989
9'84	3631	4841	7262	9683	12103	14524	16944	19365	24206	29048
9'85	3639	4851	7277	9702	12128	14553	16979	19404	24256	29107
9'86	3646	4861	7291	9722	12152	14583	17013	19444	24305	29166
9'87	3653	4871	7306	9742	12177	14613	17048	19483	24354	29225
9'88	3661	4881	7321	9761	12202	14643	17083	19523	24404	29284
9'89	3668	4891	7336	9781	12226	14672	17117	19562	24453	29344
9'90	3675	4900	7351	9801	12251	14701	17152	19602	24503	29403
9'91	3683	4910	7366	9821	12276	14731	17186	19642	24552	29463
9'92	3690	4920	7380	9841	12301	14761	17221	19681	24602	29523
9'93	3698	4930	7395	9860	12326	14791	17256	19721	24651	29583
9'94	3705	4940	7410	9880	12350	14821	17291	19761	24701	29643
9'95	3713	4950	7425	9900	12375	14850	17326	19800	24751	29703
9'96	3720	4960	7440	9920	12400	14880	17360	19840	24800	29763
9'97	3728	4970	7455	9940	12425	14910	17395	19880	24850	29823
9'98	3735	4980	7470	9960	12450	14940	17430	19920	24900	29883
9'99	3743	4990	7485	9980	12475	14970	17465	19960	24950	29943
10'00	3750	5000	7500	10000	12500	15000	17500	20000	25000	30000

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	2:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
10-01	3757	5010	7615	10020	12525	15030	17535	20040	25050	30060
10-02	3765	5020	7630	10040	12550	15060	17570	20080	25100	30120
10-03	3773	5030	7645	10060	12575	15090	17605	20120	25150	30180
10-04	3780	5040	7660	10080	12600	15120	17640	20160	25200	30240
10-05	3788	5050	7675	10100	12625	15150	17675	20200	25250	30300
10-06	3795	5060	7690	10120	12650	15181	17711	20241	25301	30361
10-07	3803	5070	7605	10140	12675	15211	17746	20281	25351	30421
10-08	3810	5080	7620	10161	12701	15241	17781	20321	25403	30483
10-09	3818	5090	7635	10182	12726	15271	17816	20362	25452	30542
10-10	3825	5100	7651	10201	12751	15301	17852	20402	25502	30602
10-11	3833	5110	7666	10221	12776	15332	17887	20442	25553	30664
10-12	3841	5121	7681	10241	12802	15362	17923	20483	25604	30724
10-13	3848	5131	7696	10262	12827	15393	17958	20523	25654	30785
10-14	3856	5141	7711	10282	12852	15423	17993	20564	25705	30846
10-15	3863	5151	7727	10303	12878	15453	18029	20604	25756	30907
10-16	3871	5161	7742	10323	12903	15483	18064	20645	25806	30968
10-17	3879	5171	7757	10343	12929	15514	18100	20686	25857	31029
10-18	3886	5182	7772	10363	12954	15545	18136	20726	25908	31090
10-19	3894	5192	7788	10383	12979	15575	18171	20767	25959	31151
10-20	3901	5203	7803	10404	13005	15606	18207	20808	26010	31212
10-21	3909	5212	7818	10424	13030	15637	18243	20849	26061	31272
10-22	3916	5222	7834	10445	13055	15667	18278	20890	26112	31333
10-23	3924	5233	7849	10465	13082	15698	18314	20931	26163	31396
10-24	3932	5243	7864	10486	13107	15728	18350	20972	26214	31457
10-25	3939	5253	7880	10506	13133	15759	18386	21012	26266	31519
10-26	3949	5265	7895	10521	13160	15790	18426	21053	26321	31580
10-27	3955	5274	7910	10547	13184	15821	18458	21095	26362	31642
10-28	3961	5284	7926	10568	13210	15852	18494	21136	26409	31704
10-29	3971	5294	7941	10588	13235	15883	18530	21177	26471	31765
10-30	3976	5300	7957	10609	13267	15913	18566	21218	26514	31827
10-31	3986	5315	7972	10630	13287	15944	18602	21259	26574	31889
10-32	3994	5325	7988	10650	13313	15975	18638	21300	26626	31951
10-33	4002	5335	8008	10671	13339	16006	18674	21342	26677	32013
10-34	4009	5346	8019	10692	13364	16037	18710	21383	26729	32075
10-35	4017	5356	8034	10712	13390	16068	18746	21424	26781	32137
10-36	4025	5366	8050	10733	13416	16099	18783	21466	26832	32199
10-37	4032	5377	8065	10754	13442	16131	18819	21507	26884	32261
10-38	4040	5387	8081	10774	13468	16162	18856	21549	26936	32323
10-39	4048	5398	8096	10795	13494	16193	18892	21590	26988	32386
10-40	4056	5408	8112	10816	13520	16224	18928	21632	27040	32448
10-41	4064	5418	8128	10837	13546	16255	18964	21672	27092	32510
10-42	4072	5429	8148	10858	13572	16286	19001	21715	27144	32573
10-43	4079	5439	8159	10878	13598	16318	19037	21757	27196	32635
10-44	4087	5450	8175	10899	13624	16349	19074	21799	27248	32698
10-45	4095	5460	8190	10920	13650	16380	19110	21840	27301	32761
10-46	4103	5471	8206	10940	13676	16412	19146	21880	27353	32823
10-47	4111	5481	8222	10962	13703	16443	19184	21924	27405	32886
10-48	4119	5492	8237	10983	13729	16475	19220	21966	27458	32949
10-49	4126	5502	8253	11004	13755	16506	19251	22008	27510	33012
10-50	4134	5513	8269	11025	13781	16537	19294	22050	27563	33075

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
10-51	4142	5523	8284	11046	13807	16569	19331	22092	24854	38138
10-52	4150	5534	8300	11061	13824	16601	19361	22122	24885	38201
10-53	4158	5544	8316	11078	13840	16632	19404	22176	24930	38244
10-54	4166	5555	8332	11095	13856	16664	19441	22218	24977	38287
10-55	4174	5565	8348	11110	13871	16694	19478	22260	25026	38330
10-56	4182	5576	8364	11125	13886	16727	19515	22303	25075	38373
10-57	4190	5586	8379	11140	13901	16759	19552	22346	25124	38416
10-58	4198	5597	8395	11154	13916	16790	19589	22387	25173	38459
10-59	4206	5607	8411	11169	13931	16822	19626	22429	25222	38502
10-60	4213	5618	8427	11183	13945	16854	19663	22472	25270	38545
10-61	4221	5628	8443	11197	13960	16886	19700	22514	25319	38588
10-62	4229	5639	8459	11212	13974	16918	19737	22557	25368	38631
10-63	4237	5650	8475	11226	13989	16950	19774	22600	25417	38674
10-64	4245	5660	8491	11240	14003	16981	19812	22642	25466	38717
10-65	4253	5671	8507	11254	14018	17018	19849	22685	25515	38760
10-66	4261	5682	8523	11268	14032	17045	19886	22727	25564	38803
10-67	4269	5692	8539	11282	14047	17077	19924	22770	25613	38846
10-68	4277	5703	8555	11296	14061	17109	19961	22812	25662	38889
10-69	4285	5714	8571	11310	14075	17141	19998	22855	25711	38932
10-70	4293	5724	8587	11324	14089	17173	20036	22898	25760	38975
10-71	4301	5735	8603	11338	14103	17206	20073	22941	25809	39018
10-72	4309	5746	8619	11352	14117	17238	20111	22984	25858	39061
10-73	4317	5757	8635	11366	14131	17270	20148	23027	25907	39104
10-74	4325	5767	8651	11380	14145	17302	20186	23070	25956	39147
10-75	4333	5778	8667	11394	14159	17334	20223	23113	26005	39190
10-76	4341	5789	8683	11408	14173	17367	20261	23156	26054	39233
10-77	4349	5800	8699	11422	14187	17399	20299	23199	26103	39276
10-78	4357	5811	8715	11436	14201	17431	20336	23242	26152	39319
10-79	4365	5821	8731	11450	14215	17464	20374	23285	26201	39362
10-80	4373	5832	8748	11464	14229	17496	20412	23328	26250	39405
10-81	4382	5843	8764	11478	14243	17528	20450	23371	26299	39448
10-82	4390	5854	8780	11492	14257	17561	20488	23414	26348	39491
10-83	4398	5864	8797	11506	14271	17593	20526	23457	26397	39534
10-84	4406	5875	8813	11520	14285	17626	20563	23500	26446	39577
10-85	4415	5886	8829	11534	14299	17658	20601	23543	26495	39620
10-86	4423	5897	8845	11548	14313	17691	20639	23586	26544	39663
10-87	4431	5908	8861	11562	14327	17724	20677	23629	26593	39706
10-88	4439	5919	8877	11576	14341	17756	20716	23672	26642	39749
10-89	4447	5930	8894	11590	14355	17789	20754	23715	26691	39792
10-90	4455	5940	8911	11604	14369	17821	20792	23758	26740	39835
10-91	4464	5951	8927	11618	14383	17854	20830	23801	26789	39878
10-92	4472	5962	8943	11632	14397	17887	20868	23844	26838	39921
10-93	4480	5972	8960	11646	14411	17920	20906	23887	26887	39964
10-94	4488	5984	8976	11660	14425	17953	20945	23930	26936	40007
10-95	4496	5995	8993	11674	14439	17985	20983	23973	26985	40050
10-96	4505	6006	9009	11688	14453	18018	21021	24016	27034	40093
10-97	4513	6017	9025	11702	14467	18051	21060	24059	27083	40136
10-98	4521	6028	9042	11716	14481	18084	21098	24102	27132	40179
10-99	4529	6039	9058	11730	14495	18117	21137	24145	27181	40222
11-00	4537	6050	9075	11744	14509	18150	21175	24188	27230	40265

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
11'01	4546	6061	9091	12122	15152	18183	21214	24244	30305	36866
11'02	4554	6072	9108	12144	15180	18216	21252	24288	30360	36922
11'03	4562	6083	9125	12164	15208	18249	21291	24332	30415	36988
11'04	4571	6094	9141	12186	15236	18283	21329	24376	30470	37056
11'05	4579	6105	9158	12210	15269	18315	21368	24420	30525	37122
11'06	4587	6116	9174	12232	15290	18349	21407	24465	30581	37189
11'07	4595	6127	9191	12254	15318	18382	21445	24509	30636	37253
11'08	4604	6138	9207	12277	15346	18415	21484	24553	30692	37319
11'09	4612	6149	9224	12299	15373	18448	21523	24598	30747	37386
11'10	4620	6160	9241	12321	15401	18481	21562	24642	30802	37453
11'11	4629	6173	9257	12343	15429	18515	21601	24686	30858	37520
11'12	4637	6183	9274	12365	15457	18548	21640	24731	30914	37586
11'13	4645	6194	9291	12388	15485	18582	21678	24775	30969	37653
11'14	4654	6205	9307	12410	15512	18615	21717	24820	31025	37720
11'15	4662	6216	9324	12432	15540	18648	21756	24864	31081	37787
11'16	4670	6227	9341	12455	15568	18682	21795	24909	31136	37853
11'17	4679	6238	9358	12477	15597	18715	21835	24954	31192	37920
11'18	4687	6250	9374	12499	15624	18749	21874	24998	31248	37986
11'19	4696	6261	9391	12522	15652	18782	21913	25043	31304	38053
11'20	4704	6272	9408	12544	15680	18816	21952	25088	31360	38120
11'21	4712	6283	9425	12566	15708	18850	21991	25133	31416	38186
11'22	4721	6294	9442	12589	15736	18883	22030	25178	31472	38253
11'23	4729	6306	9458	12611	15764	18917	22069	25223	31528	38320
11'24	4738	6317	9475	12634	15792	18951	22109	25268	31584	38386
11'25	4746	6328	9492	12656	15820	18984	22148	25312	31640	38453
11'26	4755	6339	9509	12679	15848	19018	22188	25357	31697	38520
11'27	4763	6351	9526	12701	15877	19052	22227	25402	31753	38586
11'28	4771	6362	9543	12724	15905	19086	22267	25447	31810	38653
11'29	4780	6373	9560	12746	15933	19120	22306	25492	31866	38720
11'30	4788	6384	9577	12769	15961	19153	22346	25538	31922	38786
11'31	4797	6395	9594	12792	15989	19187	22385	25583	31978	38853
11'32	4805	6407	9611	12814	16018	19221	22425	25628	32034	38920
11'33	4814	6418	9628	12837	16046	19255	22464	25674	32090	38986
11'34	4822	6429	9645	12860	16074	19289	22503	25719	32146	39053
11'35	4831	6441	9662	12882	16103	19323	22543	25764	32202	39120
11'36	4839	6452	9679	12905	16131	19357	22582	25810	32258	39186
11'37	4848	6464	9696	12928	16160	19391	22623	25855	32314	39253
11'38	4856	6475	9713	12950	16188	19426	22663	25901	32370	39320
11'39	4865	6487	9730	12973	16216	19459	22703	25946	32426	39386
11'40	4873	6498	9747	12996	16245	19494	22743	25992	32482	39453
11'41	4882	6509	9764	13019	16273	19528	22783	26038	32538	39520
11'42	4891	6521	9781	13042	16302	19562	22823	26083	32594	39586
11'43	4899	6532	9798	13064	16331	19597	22863	26129	32650	39653
11'44	4908	6544	9816	13087	16359	19631	22903	26175	32706	39720
11'45	4916	6555	9833	13110	16388	19665	22943	26220	32762	39786
11'46	4925	6567	9850	13133	16416	19700	22983	26266	32818	39853
11'47	4934	6578	9867	13156	16445	19734	23023	26312	32874	39920
11'48	4942	6589	9884	13179	16474	19769	23063	26358	32930	39986
11'49	4951	6601	9901	13202	16502	19803	23104	26404	32986	40053
11'50	4959	6612	9919	13225	16531	19837	23144	26450	33042	40120

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
11'51	4968	6624	9936	13248	16560	19872	23184	26496	33120	39744
11'52	4977	6636	9953	13271	16589	19907	23224	26542	33178	39815
11'53	4985	6647	9971	13294	16618	19941	23265	26588	33235	39881
11'54	4994	6659	9988	13317	16646	19976	23305	26634	33293	39951
11'55	5003	6670	10005	13340	16675	20010	23345	26680	33351	40021
11'56	5011	6682	10023	13363	16704	20045	23386	26727	33408	40090
11'57	5020	6693	10040	13386	16733	20080	23426	26773	33465	40159
11'58	5019	6705	10057	13410	16762	20114	23467	26819	33524	40229
11'59	5037	6716	10075	13433	16791	20149	23507	26865	33582	40298
11'60	5046	6728	10092	13456	16820	20184	23548	26912	33640	40368
11'61	5055	6740	10109	13479	16849	20219	23589	26958	33698	40438
11'62	5063	6751	10127	13502	16878	20254	23629	27005	33756	40507
11'63	5072	6763	10144	13526	16907	20289	23670	27051	33814	40577
11'64	5081	6774	10162	13549	16936	20323	23711	27098	33872	40647
11'65	5090	6785	10179	13572	16965	20358	23751	27144	33931	40717
11'66	5098	6798	10197	13595	16994	20393	23792	27191	33989	40787
11'67	5107	6809	10214	13619	17024	20428	23833	27238	34047	40857
11'68	5116	6821	10233	13642	17053	20463	23874	27284	34106	40927
11'69	5125	6833	10249	13665	17082	20498	23915	27331	34164	40997
11'70	5133	6844	10267	13689	17111	20533	23956	27378	34222	41067
11'71	5143	6856	10284	13712	17140	20569	23997	27425	34281	41137
11'72	5151	6868	10302	13736	17170	20604	24038	27472	34340	41208
11'73	5160	6880	10319	13759	17199	20639	24079	27519	34398	41278
11'74	5169	6891	10337	13783	17228	20674	24120	27566	34457	41348
11'75	5177	6903	10355	13806	17258	20709	24161	27612	34516	41419
11'76	5186	6915	10372	13830	17287	20745	24202	27659	34574	41489
11'77	5195	6927	10390	13853	17317	20780	24243	27717	34633	41560
11'78	5204	6938	10408	13877	17346	20815	24284	27764	34692	41631
11'79	5213	6950	10425	13900	17375	20851	24326	27811	34751	41701
11'80	5221	6963	10443	13924	17405	20886	24367	27848	34810	41772
11'81	5230	6974	10461	13948	17434	20921	24408	27895	34869	41843
11'82	5239	6986	10478	13971	17464	20957	24450	27942	34928	41914
11'83	5248	6997	10496	13995	17494	20992	24491	27989	34987	41985
11'84	5257	7009	10514	14020	17523	21028	24532	28039	35046	42056
11'85	5266	7021	10532	14043	17553	21063	24574	28084	35106	42127
11'86	5275	7033	10549	14066	17582	21099	24615	28132	35165	42198
11'87	5284	7045	10567	14090	17612	21135	24657	28179	35224	42269
11'88	5293	7057	10585	14113	17642	21170	24699	28227	35284	42340
11'89	5301	7069	10603	14139	17671	21206	24743	28278	35343	42411
11'90	5310	7080	10621	14161	17701	21241	24783	28328	35403	42482
11'91	5319	7092	10639	14185	17731	21277	24823	28379	35463	42554
11'92	5328	7104	10656	14209	17761	21312	24865	28427	35523	42625
11'93	5337	7116	10674	14232	17791	21348	24907	28476	35583	42697
11'94	5346	7128	10693	14256	17820	21385	24949	28525	35643	42768
11'95	5355	7140	10710	14280	17850	21420	24990	28574	35703	42840
11'96	5364	7152	10728	14304	17880	21456	25033	28626	35763	42911
11'97	5373	7164	10746	14328	17910	21492	25074	28676	35823	42982
11'98	5382	7176	10764	14352	17940	21528	25116	28724	35884	43054
11'99	5391	7188	10783	14375	17970	21564	25158	28773	35944	43125
12'00	5400	7200	10800	14400	18000	21600	25200	28820	36000	43200

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
12'01	5409	7212	10818	14424	18030	21636	25242	28848	36060	48272
12'02	5418	7224	10836	14448	18060	21672	25284	28896	36120	48344
12'03	5427	7236	10854	14472	18090	21708	25326	28944	36180	48416
12'04	5436	7248	10872	14496	18120	21744	25368	28992	36240	48488
12'05	5445	7260	10890	14520	18150	21780	25410	29040	36301	48561
12'06	5454	7272	10908	14544	18180	21817	25453	29089	36361	48633
12'07	5463	7284	10926	14568	18211	21853	25495	29137	36421	48705
12'08	5472	7296	10944	14592	18241	21889	25537	29185	36481	48778
12'09	5481	7308	10963	14617	18271	21925	25579	29234	36542	48850
12'10	5490	7320	10981	14641	18301	21961	25622	29282	36602	48923
12'11	5499	7332	10999	14665	18331	21998	25664	29330	36663	48996
12'12	5509	7344	11017	14689	18362	22034	25707	29379	36724	49068
12'13	5518	7356	11035	14714	18392	22071	25749	29427	36784	49141
12'14	5527	7368	11053	14738	18423	22107	25791	29476	36845	49214
12'15	5536	7381	11072	14762	18453	22143	25834	29524	36906	49287
12'16	5545	7393	11090	14787	18483	22180	25876	29573	36966	49360
12'17	5554	7405	11108	14811	18514	22216	25919	29622	37027	49433
12'18	5563	7418	11126	14835	18544	22253	25962	29670	37088	49506
12'19	5572	7430	11145	14860	18574	22289	26004	29719	37149	49578
12'20	5581	7442	11163	14884	18605	22326	26047	29768	37210	49652
12'21	5591	7454	11181	14908	18635	22363	26090	29817	37271	49725
12'22	5600	7466	11200	14933	18666	22399	26132	29866	37332	49798
12'23	5609	7479	11218	14957	18697	22436	26175	29915	37393	49872
12'24	5618	7491	11236	14982	18727	22473	26218	29964	37454	49945
12'25	5627	7503	11255	15006	18758	22509	26261	30013	37515	50019
12'26	5637	7516	11273	15031	18788	22546	26304	30061	37577	50092
12'27	5646	7528	11291	15055	18819	22583	26347	30111	37638	50166
12'28	5655	7540	11310	15080	18850	22619	26390	30160	37699	50239
12'29	5664	7552	11328	15104	18880	22657	26433	30209	37761	50313
12'30	5673	7564	11347	15129	18911	22693	26476	30258	37822	50387
12'31	5683	7577	11365	15154	18942	22730	26519	30307	37884	50461
12'32	5692	7589	11384	15178	18973	22767	26562	30356	37945	50535
12'33	5701	7601	11402	15203	19004	22804	26605	30406	38007	50609
12'34	5710	7614	11421	15228	19034	22841	26648	30455	38069	50683
12'35	5720	7626	11439	15252	19065	22878	26691	30504	38131	50757
12'36	5729	7638	11458	15277	19096	22915	26735	30554	38192	50831
12'37	5738	7651	11476	15302	19127	22953	26778	30603	38254	50905
12'38	5747	7663	11495	15326	19158	22990	26821	30653	38316	50979
12'39	5757	7676	11513	15351	19189	23027	26865	30702	38378	51053
12'40	5766	7688	11532	15376	19220	23064	26906	30752	38440	51128
12'41	5776	7700	11551	15401	19251	23101	26951	30802	38502	51202
12'42	5785	7713	11569	15426	19282	23138	26995	30851	38564	51277
12'43	5794	7726	11588	15450	19313	23176	27038	30901	38626	51351
12'44	5803	7738	11607	15475	19344	23213	27082	30951	38688	51426
12'45	5813	7750	11626	15500	19375	23250	27125	31000	38751	51501
12'46	5822	7762	11644	15525	19406	23288	27169	31050	38813	51575
12'47	5831	7775	11663	15550	19438	23325	27213	31100	38875	51650
12'48	5841	7788	11681	15575	19469	23363	27256	31150	38938	51725
12'49	5850	7800	11700	15600	19500	23400	27300	31200	39000	51800
12'50	5859	7813	11719	15625	19531	23437	27344	31250	39063	51875

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
1251	5869	7825	11737	15650	19562	23475	27388	31300	35212	39125
1252	5878	7888	11756	15675	19594	23519	27431	31350	35268	39188
1253	5888	7850	11775	15700	19625	23550	27475	31400	35350	39200
1254	5897	7863	11794	15725	19656	23588	27519	31450	35388	39218
1255	5906	7875	11813	15750	19688	23625	27568	31500	35438	39261
1256	5916	7888	11832	15775	19719	23668	27607	31551	35488	39326
1257	5926	7900	11850	15800	19751	23701	27651	31601	35501	39401
1258	5935	7918	11869	15825	19782	23738	27696	31651	35564	39477
1259	5944	7925	11888	15851	19813	23776	27739	31702	35627	39553
1260	5953	7938	11907	15876	19845	23814	27783	31752	35690	39628
1261	5963	7951	11926	15901	19876	23852	27827	31802	35758	39704
1262	5972	7963	11945	15926	19908	23890	27871	31853	35816	39779
1263	5982	7976	11964	15952	19940	23928	27916	31903	35880	39855
1264	5991	7988	11983	15977	19971	23965	27960	31954	35942	39931
1265	6001	8000	12002	16000	20002	24003	28002	32000	40004	40007
1266	6010	8014	12021	16025	20054	24041	28048	32055	40069	40083
1267	6020	8026	12040	16058	20066	24079	28098	32106	40133	40159
1268	6029	8039	12059	16078	20098	24117	28137	32156	40196	40235
1269	6039	8052	12078	16104	20129	24155	28181	32207	40259	40311
1270	6048	8064	12097	16129	20161	24193	28226	32258	40322	40387
1271	6058	8077	12116	16154	20193	24232	28270	32309	40387	40463
1272	6067	8090	12135	16180	20225	24270	28315	32360	40450	40540
1273	6077	8103	12154	16205	20257	24308	28359	32411	40513	40616
1274	6087	8115	12173	16231	20288	24346	28404	32463	40577	40692
1275	6096	8128	12192	16256	20320	24384	28448	32512	40641	40769
1276	6106	8141	12211	16282	20352	24423	28493	32564	40704	40845
1277	6115	8154	12230	16307	20383	24461	28538	32615	40767	40922
1278	6125	8166	12250	16333	20416	24499	28582	32666	40832	40999
1279	6134	8179	12269	16358	20448	24538	28627	32717	40896	41075
1280	6144	8192	12288	16384	20480	24576	28672	32768	40960	41152
1281	6154	8205	12307	16410	20512	24614	28717	32819	41024	41229
1282	6163	8218	12326	16435	20544	24653	28762	32870	41088	41305
1283	6173	8230	12346	16461	20576	24691	28807	32922	41152	41382
1284	6183	8243	12365	16487	20608	24730	28851	32973	41216	41459
1285	6192	8256	12384	16512	20640	24768	28896	33024	41281	41535
1286	6202	8269	12403	16538	20672	24807	28941	33075	41345	41612
1287	6211	8282	12423	16564	20705	24846	28986	33127	41409	41689
1288	6221	8295	12442	16589	20737	24884	29032	33179	41474	41765
1289	6231	8308	12461	16615	20769	24923	29077	33230	41538	41842
1290	6240	8320	12481	16641	20801	24960	29122	33282	41603	41919
1291	6250	8333	12500	16667	20833	25000	29167	33334	41667	50000
1292	6260	8346	12519	16693	20865	25039	29212	33385	41732	50078
1293	6269	8359	12539	16718	20898	25078	29257	33437	41796	50155
1294	6279	8372	12558	16744	20930	25117	29303	33489	41861	50232
1295	6289	8385	12578	16770	20963	25156	29348	33540	41926	50311
1296	6299	8398	12597	16797	20995	25194	29394	33594	41990	50388
1297	6308	8411	12617	16823	21028	25233	29439	33644	42055	50465
1298	6318	8424	12636	16848	21060	25272	29484	33696	42120	50544
1299	6328	8437	12655	16874	21092	25311	29530	33748	42185	50622
1300	6337	8450	12675	16900	21125	25350	29575	33800	42250	50700

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	F:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
13'01	6347	8463	12694	16926	21157	25389	29621	33853	42815	50778
13'02	6857	9476	12714	16952	21190	25428	29665	33904	42880	50856
13'03	6867	9489	12734	16978	21233	25467	29712	33956	42445	50934
13'04	6877	9502	12753	17004	21255	25506	29757	34008	42510	51012
13'05	6886	9515	12773	17030	21268	25545	29803	34060	42576	51091
13'06	6896	9528	12792	17056	21290	25585	29849	34113	42641	51169
13'07	6906	9541	12812	17082	21333	25624	29894	34165	42706	51247
13'08	6915	9554	12831	17109	21385	25663	29940	34217	42772	51326
13'09	6926	9567	12851	17135	21418	25702	29986	34270	42837	51404
13'10	6935	9580	12871	17161	21451	25741	30032	34322	42902	51483
13'11	6945	9594	12890	17187	21484	25781	30078	34374	42968	51562
13'12	6955	9607	12910	17213	21517	25820	30124	34427	43034	51640
13'13	6965	9620	12930	17240	21550	25860	30169	34479	43099	51719
13'14	6975	9633	12949	17266	21582	25899	30215	34532	43165	51798
13'15	6985	9646	12969	17292	21615	25938	30261	34584	43231	51877
13'16	6995	9659	12989	17319	21648	25978	30307	34637	43296	51956
13'17	7006	9672	13009	17345	21681	26017	30354	34690	43362	52035
13'18	7015	9686	13028	17371	21714	26057	30400	34743	43428	52114
13'19	7026	9699	13048	17398	21747	26096	30446	34795	43494	52193
13'20	7035	9713	13068	17424	21780	26136	30492	34848	43560	52272
13'21	7045	9726	13088	17450	21813	26176	30538	34901	43626	52351
13'22	7055	9739	13108	17477	21846	26215	30584	34954	43692	52431
13'23	7065	9752	13127	17503	21879	26255	30631	35007	43758	52510
13'24	7075	9765	13147	17530	21912	26295	30677	35060	43824	52589
13'25	7085	9778	13167	17556	21945	26334	30723	35113	43891	52669
13'26	7095	9791	13187	17583	21978	26374	30770	35166	43957	52748
13'27	7106	9804	13207	17609	22013	26414	30816	35219	44023	52827
13'28	7115	9818	13227	17636	22045	26454	30863	35272	44090	52906
13'29	7126	9831	13247	17662	22078	26494	30909	35325	44156	52985
13'30	7135	9844	13267	17689	22111	26533	30956	35378	44222	53064
13'31	7145	9858	13287	17716	22144	26573	31002	35431	44289	53143
13'32	7155	9871	13307	17742	22178	26613	31049	35484	44356	53222
13'33	7165	9884	13327	17769	22211	26653	31096	35538	44423	53301
13'34	7175	9898	13347	17795	22244	26693	31143	35591	44489	53380
13'35	7185	9911	13367	17823	22278	26733	31189	35644	44556	53459
13'36	7195	9924	13387	17849	22311	26773	31236	35698	44623	53538
13'37	7206	9938	13407	17876	22345	26814	31283	35751	44690	53617
13'38	7215	9951	13427	17902	22378	26854	31330	35805	44756	53696
13'39	7226	9965	13447	17929	22411	26894	31377	35858	44823	53775
13'40	7235	9978	13467	17956	22445	26934	31423	35912	44890	53854
13'41	7245	9991	13487	17983	22478	26974	31470	35966	44957	53933
13'42	7255	10005	13507	18010	22512	27014	31517	36019	45024	54012
13'43	7265	10018	13527	18036	22546	27055	31564	36073	45091	54091
13'44	7275	10032	13548	18063	22579	27095	31611	36127	45156	54170
13'45	7285	10045	13568	18090	22613	27135	31658	36180	45223	54249
13'46	7295	10059	13588	18117	22646	27176	31705	36234	45289	54328
13'47	7306	10072	13608	18144	22680	27216	31752	36288	45356	54407
13'48	7315	10086	13628	18171	22714	27257	31799	36342	45423	54486
13'49	7326	10099	13648	18198	22747	27297	31847	36396	45490	54565
13'50	7335	10113	13669	18225	22781	27337	31894	36450	45557	54644

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
13:51	6844	9126	13689	18252	22815	27378	31941	36504	46030	54756
13:52	6855	9140	13709	18279	22849	27419	31988	36558	46098	54837
13:53	6865	9153	13730	18306	22888	27459	32036	36612	46165	54918
13:54	6875	9167	13750	18333	22916	27500	32083	36666	46233	54999
13:55	6885	9180	13770	18360	22950	27540	32130	36720	46301	55081
13:56	6895	9194	13791	18387	22984	27581	32178	36775	46368	55163
13:57	6905	9207	13811	18414	23018	27622	32225	36829	46436	55245
13:58	6916	9221	13831	18442	23052	27662	32273	36888	46504	55326
13:59	6929	9234	13852	18469	23086	27703	32320	36938	46572	55408
13:60	6936	9248	13872	18496	23120	27744	32368	36992	46640	55488
13:61	6946	9262	13892	18523	23154	27785	32416	37046	46708	55570
13:62	6956	9275	13913	18550	23188	27826	32463	37101	46776	55651
13:63	6967	9289	13933	18578	23222	27867	32511	37155	46844	55733
13:64	6977	9302	13954	18606	23256	27907	32559	37210	46912	55815
13:65	6987	9316	13974	18632	23290	27948	32606	37264	46981	55897
13:66	6997	9330	13995	18660	23324	27989	32654	37319	47049	55979
13:67	7008	9343	14015	18687	23358	28030	32702	37374	47117	56061
13:68	7018	9357	14036	18714	23393	28071	32750	37428	47186	56143
13:69	7028	9371	14056	18742	23427	28112	32798	37483	47254	56225
13:70	7038	9384	14077	18769	23461	28153	32845	37538	47323	56307
13:71	7049	9398	14097	18796	23495	28195	32894	37593	47391	56389
13:72	7057	9412	14118	18824	23530	28236	32942	37648	47460	56472
13:73	7069	9426	14138	18851	23564	28277	32990	37703	47528	56554
13:74	7080	9440	14159	18879	23598	28318	33038	37758	47597	56636
13:75	7090	9458	14180	18906	23633	28359	33086	37812	47666	56719
13:76	7100	9467	14200	18934	23667	28401	33134	37868	47734	56801
13:77	7110	9481	14221	18961	23702	28442	33182	37923	47803	56884
13:78	7121	9494	14242	18989	23736	28483	33230	37978	47872	56967
13:79	7131	9508	14262	19016	23770	28525	33279	38033	47941	57049
13:80	7141	9522	14283	19044	23805	28566	33327	38088	48010	57132
13:81	7152	9536	14304	19072	23839	28607	33375	38143	48079	57215
13:82	7162	9550	14324	19099	23874	28649	33423	38198	48148	57298
13:83	7173	9563	14346	19127	23909	28690	33473	38254	48217	57381
13:84	7183	9577	14366	19156	23943	28732	33520	38309	48286	57464
13:85	7193	9591	14387	19182	23978	28773	33569	38364	48355	57547
13:86	7204	9605	14407	19210	24012	28815	33617	38420	48424	57630
13:87	7214	9619	14428	19238	24047	28857	33666	38475	48493	57713
13:88	7225	9633	14449	19266	24082	28898	33715	38531	48562	57796
13:89	7235	9647	14470	19293	24116	28940	33763	38586	48631	57880
13:90	7245	9660	14491	19321	24151	28981	33812	38642	48700	57963
13:91	7256	9674	14512	19349	24186	29023	33860	38698	48769	58046
13:92	7266	9688	14532	19377	24221	29065	33909	38753	48838	58129
13:93	7277	9702	14553	19401	24256	29107	33958	38809	48907	58212
13:94	7287	9716	14574	19432	24290	29149	34007	38865	48976	58295
13:95	7298	9730	14595	19460	24325	29190	34056	38920	49045	58378
13:96	7308	9744	14616	19488	24360	29232	34104	38976	49114	58461
13:97	7319	9758	14637	19516	24395	29274	34153	39032	49183	58544
13:98	7329	9772	14658	19544	24430	29316	34202	39088	49252	58627
13:99	7339	9786	14679	19572	24465	29358	34251	39144	49321	58710
14:00	7350	9800	14700	19600	24500	29400	34300	39200	49390	58793

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
14'01	7360	9814	14721	19628	24635	29442	34349	39256	49070	58884
14'02	7371	9828	14742	19656	24670	29484	34398	39312	49140	58968
14'03	7382	9842	14763	19684	24705	29526	34447	39368	49210	59053
14'04	7392	9856	14784	19712	24740	29568	34496	39424	49280	59136
14'05	7403	9870	14805	19740	24775	29610	34545	39480	49351	59221
14'06	7415	9884	14826	19768	24810	29652	34595	39537	49421	59305
14'07	7424	9898	14847	19796	24846	29695	34644	39593	49491	59389
14'08	7434	9912	14868	19825	24881	29737	34693	39649	49561	59474
14'09	7445	9926	14890	19853	24916	29779	34742	39706	49632	59558
14'10	7455	9940	14911	19881	24951	29821	34792	39762	49703	59643
14'11	7466	9955	14932	19909	24986	29864	34841	39818	49773	59728
14'12	7477	9969	14953	19937	25022	29906	34891	39875	49844	59812
14'13	7487	9983	14974	19966	25057	29949	34940	39931	49914	59897
14'14	7498	9997	14995	19994	25092	29991	34989	39988	49985	59982
14'15	7508	10011	15017	20022	25128	30033	35039	40044	50056	60067
14'16	7519	10025	15038	20051	25163	30076	35088	40101	50126	60132
14'17	7530	10039	15059	20079	25199	30118	35138	40158	50187	60227
14'18	7540	10054	15080	20107	25234	30161	35188	40214	50268	60323
14'19	7551	10068	15102	20136	25269	30203	35237	40271	50339	60407
14'20	7561	10082	15123	20164	25305	30246	35287	40328	50410	60492
14'21	7572	10096	15144	20192	25340	30289	35337	40385	50481	60577
14'22	7583	10110	15166	20221	25376	30331	35386	40442	50552	60662
14'23	7593	10125	15187	20249	25412	30374	35436	40499	50623	60748
14'24	7604	10139	15208	20278	25447	30417	35486	40556	50694	60833
14'25	7615	10153	15230	20306	25483	30459	35536	40613	50766	60919
14'26	7626	10167	15251	20335	25518	30503	35586	40670	50837	61004
14'27	7636	10182	15272	20363	25554	30545	35636	40727	50908	61090
14'28	7647	10196	15294	20391	25590	30588	35686	40784	50980	61176
14'29	7658	10210	15315	20420	25625	30631	35736	40841	51051	61261
14'30	7668	10224	15337	20449	25661	30673	35786	40898	51122	61347
14'31	7679	10239	15358	20478	25697	30716	35836	40955	51194	61433
14'32	7690	10253	15380	20506	25733	30759	35886	41012	51265	61519
14'33	7701	10267	15401	20535	25769	30803	35936	41070	51337	61605
14'34	7711	10282	15423	20564	25804	30845	35986	41127	51409	61691
14'35	7722	10296	15444	20592	25840	30888	36036	41184	51481	61777
14'36	7732	10310	15466	20621	25876	30931	36087	41242	51553	61863
14'37	7744	10325	15487	20650	25912	30975	36137	41299	51624	61949
14'38	7754	10339	15509	20678	25948	31018	36187	41357	51696	62035
14'39	7765	10354	15530	20707	25984	31061	36238	41414	51768	62121
14'40	7776	10368	15552	20736	26020	31104	36288	41472	51840	62207
14'41	7787	10382	15574	20765	26056	31147	36338	41530	51912	62294
14'42	7797	10397	15595	20794	26092	31190	36389	41587	51984	62380
14'43	7808	10411	15617	20822	26128	31234	36439	41645	52056	62467
14'44	7819	10426	15639	20851	26164	31277	36490	41703	52128	62554
14'45	7830	10440	15660	20880	26200	31320	36540	41760	52201	62641
14'46	7841	10455	15682	20909	26236	31364	36591	41818	52273	62727
14'47	7852	10469	15704	20938	26272	31407	36642	41876	52345	62814
14'48	7863	10484	15726	20967	26308	31451	36693	41934	52418	62901
14'49	7874	10498	15747	20996	26345	31494	36744	41992	52490	62988
14'50	7885	10513	15769	21025	26381	31537	36794	42050	52562	63074

TABLE, II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
14.51	7895	10527	15790	21054	26317	31581	36845	42108	52685
14.52	7906	10542	15812	21083	26354	31625	36885	42166	52708
14.53	7917	10556	15834	21112	26390	31668	36946	42224	52780
14.54	7928	10571	15856	21141	26426	31712	36997	42283	52853
14.55	7939	10585	15878	21170	26463	31755	37048	42340	52926
14.56	7950	10600	15900	21199	26499	31799	37099	42399	52999
14.57	7961	10614	15921	21228	26536	31843	37150	42456	53071
14.58	7972	10629	15943	21258	26572	31886	37201	42515	53144
14.59	7983	10643	15965	21287	26608	31930	37252	42574	53217
14.60	7993	10658	15987	21316	26645	31974	37303	42632	53290
14.61	8004	10673	16009	21345	26681	32018	37354	42690	53362
14.62	8015	10687	16031	21374	26718	32062	37405	42749	53435
14.63	8026	10702	16053	21404	26755	32106	37456	42807	53508
14.64	8037	10716	16075	21433	26791	32149	37508	42866	53581
14.65	8048	10731	16097	21462	26828	32193	37559	42924	53654
14.66	8059	10746	16119	21492	26864	32237	37610	42983	53727
14.67	8070	10760	16141	21521	26901	32281	37662	43042	53800
14.68	8081	10775	16163	21550	26938	32325	37713	43100	53873
14.69	8092	10790	16185	21580	26974	32369	37764	43159	53946
14.70	8103	10804	16207	21609	27011	32413	37816	43218	54019
14.71	8114	10819	16229	21638	27048	32458	37867	43277	54092
14.72	8125	10834	16251	21668	27085	32502	37919	43336	54165
14.73	8136	10849	16273	21697	27122	32546	37970	43395	54238
14.74	8148	10865	16295	21727	27158	32590	38022	43454	54311
14.75	8159	10878	16317	21756	27195	32634	38073	43513	54384
14.76	8170	10893	16339	21786	27232	32679	38125	43572	54457
14.77	8181	10908	16361	21815	27269	32723	38177	43631	54530
14.78	8192	10922	16384	21845	27306	32767	38228	43690	54603
14.79	8203	10937	16406	21874	27343	32812	38280	43748	54676
14.80	8214	10952	16428	21904	27380	32856	38332	43808	54749
14.81	8225	10967	16450	21934	27416	32900	38384	43867	54822
14.82	8236	10982	16472	21963	27453	32945	38436	43926	54895
14.83	8247	10996	16495	21993	27491	32989	38488	43985	54968
14.84	8258	11011	16517	22023	27528	33034	38539	44044	55041
14.85	8270	11026	16539	22053	27565	33078	38591	44103	55114
14.86	8281	11041	16561	22083	27602	33123	38643	44162	55187
14.87	8292	11056	16584	22112	27640	33168	38695	44221	55260
14.88	8303	11071	16606	22142	27677	33212	38748	44280	55333
14.89	8314	11086	16628	22171	27714	33257	38800	44339	55406
14.90	8325	11100	16651	22201	27751	33301	38852	44398	55479
14.91	8337	11115	16673	22231	27788	33345	38904	44457	55552
14.92	8348	11130	16696	22261	27826	33390	38956	44516	55625
14.93	8359	11145	16718	22290	27863	33434	39008	44575	55698
14.94	8370	11160	16740	22320	27900	33479	39061	44634	55771
14.95	8381	11175	16763	22350	27938	33523	39113	44693	55844
14.96	8392	11190	16785	22380	27975	33567	39165	44752	55917
14.97	8404	11206	16808	22410	28013	33611	39218	44811	55990
14.98	8415	11221	16830	22440	28050	33656	39270	44870	56063
14.99	8426	11235	16853	22470	28087	33700	39323	44929	56136
15.00	8437	11250	16875	22500	28125	33745	39375	44988	56209

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	3:1	2:1	1½:1	1:1	¾:1	3:1	2:1	1½:1	1:1	¾:1
15'01	8449	11265	16897	22530	28162	33795	39428	45060	50692	56325	61959
15'02	8460	11280	16920	22560	28200	33840	39480	45120	50760	56400	62040
15'03	8471	11295	16943	22590	28238	33885	39523	45180	50820	56475	62115
15'04	8483	11310	16966	22620	28275	33930	39568	45240	50880	56550	62190
15'05	8494	11325	16988	22650	28313	33975	39613	45300	50940	56625	62265
15'06	8506	11340	17010	22680	28350	34020	39658	45360	51000	56700	62340
15'07	8516	11355	17033	22710	28388	34065	39703	45420	51060	56775	62415
15'08	8528	11370	17056	22741	28426	34111	39746	45481	51120	56850	62490
15'09	8539	11385	17078	22771	28463	34156	39789	45542	51180	56925	62565
15'10	8550	11400	17101	22801	28501	34201	39832	45603	51240	57000	62640
15'11	8562	11416	17125	22831	28538	34247	39875	45662	51300	57075	62715
15'12	8573	11431	17146	22861	28577	34292	39918	45723	51360	57150	62790
15'13	8584	11446	17169	22892	28615	34338	39960	45783	51420	57225	62865
15'14	8596	11461	17191	22922	28652	34383	40001	45844	51480	57300	62940
15'15	8607	11476	17214	22952	28690	34428	40046	45904	51540	57375	63015
15'16	8618	11491	17237	22983	28728	34474	40091	45965	51600	57450	63090
15'17	8630	11506	17260	23013	28766	34519	40136	46026	51660	57525	63165
15'18	8641	11522	17283	23043	28804	34565	40181	46086	51720	57600	63240
15'19	8653	11537	17306	23074	28842	34610	40226	46147	51780	57675	63315
15'20	8664	11552	17328	23104	28880	34656	40271	46208	51840	57750	63390
15'21	8675	11567	17351	23134	28918	34702	40316	46269	51900	57825	63465
15'22	8687	11582	17374	23169	28956	34747	40361	46330	51960	57900	63540
15'23	8698	11598	17396	23196	28994	34793	40406	46391	52020	57975	63615
15'24	8710	11613	17419	23226	29032	34839	40451	46452	52080	58050	63690
15'25	8721	11628	17442	23256	29070	34884	40496	46512	52140	58125	63765
15'26	8733	11643	17465	23287	29108	34930	40541	46573	52200	58200	63840
15'27	8744	11659	17488	23317	29147	34976	40586	46634	52260	58275	63915
15'28	8756	11674	17511	23348	29186	35022	40631	46695	52320	58350	63990
15'29	8767	11689	17534	23378	29223	35068	40676	46756	52380	58425	64065
15'30	8778	11704	17557	23409	29261	35113	40721	46818	52440	58500	64140
15'31	8790	11720	17580	23440	29299	35159	40766	46879	52500	58575	64215
15'32	8801	11735	17603	23470	29338	35206	40811	46940	52560	58650	64290
15'33	8813	11750	17626	23501	29376	35251	40856	47001	52620	58725	64365
15'34	8824	11766	17649	23532	29414	35297	40901	47062	52680	58800	64440
15'35	8836	11781	17672	23562	29453	35343	40946	47123	52740	58875	64515
15'36	8847	11796	17695	23593	29491	35389	40991	47184	52800	58950	64590
15'37	8859	11812	17718	23624	29530	35436	41036	47245	52860	59025	64665
15'38	8870	11827	17741	23654	29568	35482	41081	47306	52920	59100	64740
15'39	8882	11843	17764	23685	29606	35528	41126	47367	52980	59175	64815
15'40	8893	11858	17787	23716	29645	35574	41171	47428	53040	59250	64890
15'41	8905	11873	17810	23747	29683	35620	41216	47489	53100	59325	64965
15'42	8917	11889	17833	23778	29722	35667	41261	47550	53160	59400	65040
15'43	8928	11904	17856	23808	29761	35713	41306	47611	53220	59475	65115
15'44	8940	11920	17880	23839	29799	35759	41351	47672	53280	59550	65190
15'45	8951	11935	17903	23870	29838	35806	41396	47733	53340	59625	65265
15'46	8963	11951	17926	23901	29876	35852	41441	47794	53400	59700	65340
15'47	8975	11966	17949	23932	29915	35898	41486	47855	53460	59775	65415
15'48	8986	11982	17972	23963	29954	35945	41531	47916	53520	59850	65490
15'49	8998	11997	17995	23994	29993	35991	41576	47977	53580	59925	65565
15'50	9009	12012	18018	24025	30031	36037	41621	48038	53640	60000	65640

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet	4 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
15:51	9021	12098	18043	24056	30070	36084	42098	48112	60140	72168
15:52	9033	12044	18065	24087	30109	36131	42152	48174	60218	72261
15:53	9044	12059	18089	24118	30148	36177	42207	48236	60296	72354
15:54	9056	12075	18112	24149	30186	36224	42261	48298	60373	72447
15:55	9068	12090	18135	24180	30225	36270	42318	48360	60451	72541
15:56	9079	12106	18159	24211	30264	36317	42370	48423	60528	72634
15:57	9091	12121	18182	24242	30303	36364	42424	48485	60606	72727
15:58	9103	12137	18205	24274	30342	36410	42479	48547	60684	72821
15:59	9114	12152	18229	24305	30381	36457	42533	48610	60762	72914
15:60	9126	12168	18252	24336	30420	36504	42588	48672	60840	73008
15:61	9138	12184	18276	24367	30459	36551	42643	48734	60918	73102
15:62	9149	12199	18299	24398	30498	36598	42697	48797	60996	73196
15:63	9161	12215	18323	24430	30537	36645	42752	48859	61074	73289
15:64	9173	12230	18346	24461	30576	36691	42807	48922	61152	73383
15:65	9185	12246	18369	24492	30615	36738	42861	48984	61231	73477
15:66	9196	12262	18393	24524	30654	36785	42916	49047	61309	73571
15:67	9208	12278	18416	24555	30694	36832	42971	49110	61388	73665
15:68	9220	12293	18440	24586	30733	36879	43026	49172	61466	73759
15:69	9232	12309	18463	24618	30772	36926	43081	49235	61544	73853
15:70	9243	12324	18487	24649	30811	36973	43136	49298	61622	73947
15:71	9255	12340	18510	24680	30850	37021	43191	49361	61701	74041
15:72	9267	12356	18534	24711	30890	37068	43245	49422	61780	74136
15:73	9279	12372	18557	24743	30929	37115	43301	49487	61858	74230
15:74	9291	12387	18581	24775	30968	37161	43356	49550	61937	74324
15:75	9302	12403	18605	24806	31008	37209	43411	49612	62016	74418
15:76	9314	12419	18628	24838	31047	37257	43466	49676	62094	74513
15:77	9326	12435	18652	24869	31087	37304	43521	49739	62173	74608
15:78	9338	12451	18676	24901	31126	37351	43576	49802	62252	74703
15:79	9350	12466	18699	24932	31165	37399	43632	49865	62331	74797
15:80	9361	12482	18723	24964	31205	37446	43687	49928	62410	74892
15:81	9373	12498	18747	24996	31244	37493	43742	49991	62489	74987
15:82	9385	12514	18770	25027	31284	37541	43798	50054	62568	75082
15:83	9397	12529	18794	25059	31324	37588	43853	50118	62647	75177
15:84	9409	12545	18818	25091	31363	37636	43908	50181	62726	75272
15:85	9421	12561	18842	25123	31403	37683	43964	50244	62806	75367
15:86	9433	12577	18865	25154	31442	37731	44019	50308	62883	75462
15:87	9445	12593	18889	25186	31482	37779	44075	50371	62961	75557
15:88	9456	12609	18913	25217	31522	37826	44131	50435	63044	75652
15:89	9468	12625	18937	25249	31561	37874	44186	50498	63123	75748
15:90	9480	12640	18961	25281	31601	37921	44243	50563	63202	75843
15:91	9492	12656	18985	25313	31641	37969	44297	50626	63282	75938
15:92	9504	12672	19008	25345	31681	38017	44353	50689	63362	76034
15:93	9516	12688	19032	25376	31721	38065	44409	50753	63441	76129
15:94	9528	12704	19056	25408	31760	38113	44465	50817	63521	76225
15:95	9540	12720	19080	25440	31800	38160	44520	50880	63601	76321
15:96	9552	12736	19104	25472	31840	38208	44576	50944	63680	76416
15:97	9564	12752	19128	25504	31880	38256	44632	51008	63760	76512
15:98	9576	12768	19152	25536	31920	38304	44688	51072	63840	76608
15:99	9588	12784	19176	25568	31960	38352	44744	51136	63920	76704
16:00	9600	12800	19200	25600	32000	38400	44800	51200	64000	76800

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	3:1	2:1	1½:1	1:1	¾:1	2:1	3:1	4:1	5:1	6:1
16'01	9612	12816	19227	25632	32043	38448	44859	51264	64086	76896	
16'02	9624	12832	19248	25664	32080	38496	44912	51328	64160	76992	
16'03	9636	12848	19272	25696	32110	38544	44968	51382	64210	77088	
16'04	9648	12864	19296	25728	32160	38592	45024	51456	64330	77184	
16'05	9660	12880	19320	25760	32200	38640	45080	51530	64401	77281	
16'06	9672	12896	19344	25792	32240	38688	45137	51585	64481	77377	
16'07	9684	12912	19368	25824	32281	38737	45193	51649	64561	77473	
16'08	9696	12928	19392	25857	32321	38785	45249	51713	64642	77570	
16'09	9708	12944	19417	25889	32365	38835	45305	51778	64721	77666	
16'10	9720	12960	19441	25921	32401	38881	45362	51843	64802	77763	
16'11	9732	12977	19465	25953	32441	38930	45418	51906	64883	77860	
16'12	9745	12993	19489	25985	32482	38978	45475	51971	64964	77956	
16'13	9757	13009	19513	26018	32522	39027	45531	52035	65044	78053	
16'14	9769	13025	19537	26050	32563	39075	45587	52100	65125	78150	
16'15	9781	13041	19562	26082	32603	39123	45644	52164	65206	78247	
16'16	9793	13057	19586	26115	32643	39172	45700	52229	65286	78344	
16'17	9804	13073	19610	26147	32684	39220	45757	52294	65367	78441	
16'18	9817	13090	19634	26179	32724	39269	45814	52358	65448	78539	
16'19	9829	13106	19658	26212	32764	39317	45870	52423	65529	78636	
16'20	9840	13122	19683	26244	32805	39366	45927	52488	65610	78733	
16'21	9854	13138	19707	26276	32845	39415	45984	52553	65691	78829	
16'22	9866	13154	19732	26309	32886	39463	46040	52617	65772	78927	
16'23	9878	13171	19756	26341	32927	39512	46097	52683	65853	79024	
16'24	9890	13187	19780	26374	32967	39561	46154	52748	65934	79121	
16'25	9902	13203	19805	26406	33008	39609	46211	52812	66016	79219	
16'26	9915	13219	19829	26439	33048	39658	46268	52878	66097	79316	
16'27	9927	13236	19853	26471	33089	39707	46325	52943	66178	79414	
16'28	9939	13252	19878	26504	33130	39756	46382	53008	66260	79511	
16'29	9951	13268	19902	26536	33170	39805	46439	53073	66341	79609	
16'30	9963	13284	19927	26569	33211	39855	46496	53138	66422	79707	
16'31	9976	13301	19951	26602	33252	39903	46553	53203	66504	79805	
16'32	9988	13317	19976	26634	33293	39951	46610	53268	66586	79903	
16'33	10000	13333	20000	26667	33334	40000	46667	53334	66667	80001	
16'34	10012	13350	20025	26700	33375	40049	46724	53399	66749	80079	
16'35	10025	13366	20049	26732	33415	40098	46781	53464	66831	80157	
16'36	10037	13382	20074	26765	33456	40147	46839	53530	66913	80235	
16'37	10049	13399	20098	26798	33497	40197	46896	53595	66994	80313	
16'38	10061	13415	20123	26830	33538	40246	46953	53661	67076	80391	
16'39	10074	13432	20147	26863	33579	40295	47011	53726	67158	80469	
16'40	10086	13448	20172	26896	33620	40344	47068	53792	67240	80548	
16'41	10098	13464	20197	26929	33661	40393	47125	53858	67322	80626	
16'42	10111	13481	20221	26962	33702	40442	47183	53923	67404	80705	
16'43	10123	13497	20246	26994	33743	40492	47240	53989	67486	80783	
16'44	10135	13514	20271	27027	33784	40541	47298	54055	67568	80862	
16'45	10148	13530	20296	27060	33825	40590	47355	54120	67651	80941	
16'46	10160	13547	20321	27093	33866	40640	47413	54186	67733	81020	
16'47	10173	13563	20345	27126	33908	40689	47471	54252	67816	81099	
16'48	10185	13580	20369	27159	33949	40739	47528	54318	67898	81177	
16'49	10198	13596	20394	27192	33990	40788	47586	54384	67980	81256	
16'50	10210	13612	20419	27225	34031	40837	47644	54450	68062	81335	

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
1651	10222	15629	20443	27258	34072	40887	47702	54516	61331	68145
1652	10234	15646	20468	27291	34114	40937	47759	54583	61408	68238
1653	10247	15662	20493	27324	34155	40986	47817	54649	61473	68310
1654	10259	15679	20518	27357	34196	41036	47875	54714	61538	68381
1655	10271	15695	20543	27390	34238	41084	47933	54780	61604	68452
1656	10284	15712	20568	27423	34279	41135	47991	54847	61670	68523
1657	10296	15728	20592	27456	34321	41185	48049	54913	61736	68594
1658	10309	15745	20617	27490	34362	41234	48107	54979	61802	68665
1659	10321	15761	20642	27523	34403	41284	48165	55046	61868	68736
1660	10333	15778	20667	27556	34445	41334	48228	55112	61939	68807
1661	10346	15795	20692	27589	34486	41384	48281	55178	62005	68878
1662	10358	15811	20717	27622	34528	41434	48339	55245	62071	68949
1663	10361	15828	20742	27656	34570	41484	48397	55311	62137	69020
1664	10383	15844	20767	27689	34611	41533	48456	55378	62203	69091
1665	10396	15861	20792	27722	34653	41583	48514	55444	62269	69162
1666	10408	15878	20817	27756	34695	41633	48572	55511	62335	69233
1667	10421	15895	20842	27789	34737	41683	48630	55578	62401	69304
1668	10433	15911	20867	27823	34778	41733	48689	55644	62467	69375
1669	10446	15928	20892	27856	34819	41783	48747	55711	62533	69446
1670	10458	15944	20917	27889	34861	41833	48806	55778	62600	69517
1671	10471	15961	20942	27922	34903	41884	48864	55845	62666	69588
1672	10483	15978	20967	27956	34945	41934	48923	55912	62732	69659
1673	10496	15995	20992	27989	34987	41984	48981	55979	62798	69730
1674	10509	16011	21017	28023	35028	42034	49040	56046	62864	69801
1675	10521	16028	21042	28056	35070	42084	49098	56113	62930	69872
1676	10534	16045	21067	28090	35112	42135	49157	56180	62996	69943
1677	10546	16062	21092	28123	35154	42185	49216	56247	63062	70014
1678	10559	16078	21118	28157	35196	42235	49274	56314	63128	70085
1679	10571	16095	21143	28190	35238	42286	49333	56381	63194	70156
1680	10584	16112	21168	28224	35280	42336	49392	56448	63260	70227
1681	10597	16129	21193	28258	35322	42386	49451	56515	63326	70298
1682	10609	16146	21218	28291	35364	42437	49510	56582	63392	70369
1683	10622	16162	21244	28325	35406	42487	49569	56650	63458	70440
1684	10634	16179	21269	28359	35448	42538	49627	56717	63524	70511
1685	10647	16196	21294	28392	35490	42588	49686	56784	63590	70582
1686	10659	16213	21319	28426	35532	42639	49745	56852	63656	70653
1687	10672	16230	21345	28460	35574	42690	49804	56919	63722	70724
1688	10685	16247	21370	28493	35617	42740	49864	56987	63788	70795
1689	10698	16264	21395	28527	35659	42791	49923	57054	63854	70866
1690	10710	16280	21421	28561	35701	42841	49983	57122	63920	70937
1691	10723	16297	21446	28594	35743	42892	50040	57189	63986	71008
1692	10736	16314	21471	28629	35786	42943	50100	57257	64052	71079
1693	10748	16331	21497	28663	35828	42994	50159	57325	64118	71150
1694	10761	16348	21522	28696	35870	43045	50219	57393	64184	71221
1695	10774	16365	21548	28730	35912	43096	50278	57460	64250	71292
1696	10787	16382	21573	28764	35955	43146	50337	57528	64316	71363
1697	10799	16399	21599	28798	35998	43197	50397	57596	64382	71434
1698	10812	16416	21624	28832	36040	43248	50456	57664	64448	71505
1699	10825	16433	21649	28866	36082	43299	50516	57732	64514	71576
1700	10837	16450	21674	28900	36125	43350	50575	57800	64580	71647

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
17'01	10850	14467	21700	28984	36167	43401	50635	57868	73835	86902
17'02	10863	14484	21726	28968	36210	43452	50694	57936	73920	86904
17'03	10876	14501	21752	29002	36253	43503	50754	58004	74006	87006
17'04	10889	14518	21777	29036	36296	43554	50818	58072	74090	87108
17'05	10901	14535	21808	29070	36338	43605	50878	58140	74176	87211
17'06	10914	14552	21828	29104	36380	43657	50938	58209	74261	87313
17'07	10927	14569	21854	29138	36423	43708	50999	58277	74346	87415
17'08	10940	14586	21879	29173	36466	43759	51059	58345	74432	87518
17'09	10953	14603	21906	29207	36508	43810	51112	58414	74517	87620
17'10	10966	14620	21931	29241	36551	43861	51172	58483	74602	87723
17'11	10978	14638	21956	29275	36594	43912	51232	58550	74688	87826
17'12	10991	14655	21982	29309	36637	43964	51292	58619	74774	87928
17'13	11004	14672	22008	29344	36680	44016	51351	58687	74860	88031
17'14	11017	14689	22033	29378	36723	44067	51411	58756	74945	88134
17'15	11030	14706	22059	29412	36765	44118	51471	58824	75031	88237
17'16	11042	14723	22086	29447	36808	44170	51531	58893	75116	88340
17'17	11055	14740	22111	29481	36851	44221	51592	58962	75202	88443
17'18	11068	14758	22136	29515	36894	44273	51652	59030	75288	88546
17'19	11081	14775	22162	29550	36937	44324	51712	59099	75374	88649
17'20	11094	14792	22188	29584	36980	44376	51772	59168	75460	88752
17'21	11107	14809	22214	29618	37023	44428	51832	59236	75546	88855
17'22	11120	14826	22240	29653	37066	44479	51892	59305	75632	88958
17'23	11133	14843	22265	29687	37109	44531	51952	59375	75718	89062
17'24	11146	14861	22291	29722	37152	44583	52012	59444	75804	89165
17'25	11159	14878	22317	29756	37195	44634	52072	59513	75890	89269
17'26	11172	14895	22343	29791	37238	44686	52134	59582	75976	89373
17'27	11184	14913	22369	29825	37282	44738	52194	59651	76062	89476
17'28	11197	14930	22395	29860	37325	44790	52255	59720	76148	89580
17'29	11210	14947	22421	29894	37368	44842	52315	59789	76234	89683
17'30	11223	14964	22447	29929	37411	44893	52376	59858	76320	89787
17'31	11236	14982	22473	29963	37454	44945	52436	59926	76406	89891
17'32	11249	14999	22499	29998	37497	44997	52497	59996	76492	89995
17'33	11262	15016	22525	30032	37541	45049	52557	60066	76578	90099
17'34	11275	15034	22551	30066	37584	45101	52618	60136	76664	90203
17'35	11288	15051	22577	30102	37628	45153	52679	60205	76750	90306
17'36	11301	15068	22603	30137	37671	45205	52740	60274	76836	90411
17'37	11314	15086	22629	30172	37715	45258	52800	60343	76922	90515
17'38	11327	15103	22655	30206	37758	45310	52861	60412	77008	90619
17'39	11340	15121	22681	30241	37801	45362	52922	60482	77094	90723
17'40	11353	15138	22707	30276	37845	45414	52983	60552	77180	90828
17'41	11367	15156	22733	30311	37888	45466	53044	60622	77266	90932
17'42	11380	15173	22759	30346	37932	45518	53105	60691	77352	91037
17'43	11393	15190	22785	30380	37976	45571	53166	60761	77438	91141
17'44	11406	15208	22812	30415	38020	45623	53227	60831	77524	91246
17'45	11419	15225	22838	30450	38063	45675	53288	60900	77610	91351
17'46	11432	15243	22864	30485	38106	45728	53349	60970	77696	91455
17'47	11445	15260	22890	30520	38150	45780	53410	61040	77782	91560
17'48	11458	15278	22916	30555	38194	45832	53471	61110	77868	91665
17'49	11471	15295	22942	30590	38237	45885	53532	61180	77954	91770
17'50	11484	15312	22969	30625	38281	45937	53594	61250	78040	91875

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
17.51	11497	15330	22998	30660	38325	45990	53655	61320	76650	91980
17.52	11511	15348	23021	30693	38369	46043	53716	61390	76788	92085
17.53	11524	15365	23048	30730	38413	46095	53778	61440	76825	92190
17.54	11537	15383	23074	30765	38456	46148	53839	61580	76918	92295
17.55	11550	15400	23100	30800	38500	46200	53900	61600	77001	92401
17.56	11563	15418	23127	30835	38544	46253	53963	61671	77089	92506
17.57	11576	15435	23159	30870	38588	46306	54023	61741	77176	92611
17.58	11590	15458	23179	30906	38632	46358	54085	61811	77264	92717
17.59	11603	15470	23206	30941	38676	46411	54146	61882	77353	92823
17.60	11616	15488	23232	30976	38720	46464	54208	61953	77440	92928
17.61	11629	15506	23258	31011	38764	46517	54270	62023	77528	93034
17.62	11642	15523	23285	31046	38808	46570	54331	62093	77616	93139
17.63	11656	15541	23311	31082	38852	46623	54395	62163	77704	93245
17.64	11669	15558	23338	31117	38896	46675	54455	62234	77792	93351
17.65	11682	15576	23364	31152	38940	46728	54516	62304	77881	93457
17.66	11695	15594	23391	31188	38984	46781	54578	62375	77969	93563
17.67	11709	15611	23417	31223	39029	46834	54640	62445	78057	93669
17.68	11722	15629	23445	31258	39074	46887	54703	62516	78147	93775
17.69	11735	15647	23470	31294	39117	46940	54764	62587	78234	93881
17.70	11748	15664	23497	31329	39161	46993	54826	62658	78322	93987
17.71	11763	15682	23523	31364	39205	47047	54888	62729	78411	94093
17.72	11776	15700	23550	31400	39250	47100	54950	62800	78500	94200
17.73	11788	15718	23576	31435	39294	47153	55012	62871	78588	94306
17.74	11802	15735	23603	31471	39338	47206	55074	62942	78677	94412
17.75	11815	15753	23630	31506	39383	47259	55136	63012	78766	94519
17.76	11828	15771	23656	31542	39427	47312	55198	63084	78854	94625
17.77	11841	15789	23683	31577	39472	47365	55260	63155	78943	94732
17.78	11855	15806	23710	31613	39516	47419	55322	63226	79032	94839
17.79	11868	15824	23736	31648	39560	47473	55385	63297	79121	94945
17.80	11881	15842	23763	31684	39605	47526	55447	63368	79210	95052
17.81	11895	15860	23790	31720	39649	47579	55509	63439	79299	95159
17.82	11908	15878	23816	31755	39694	47633	55572	63510	79388	95266
17.83	11922	15895	23843	31791	39739	47686	55634	63582	79477	95373
17.84	11935	15913	23870	31827	39783	47740	55696	63653	79566	95480
17.85	11948	15931	23897	31862	39828	47793	55759	63724	79655	95587
17.86	11962	15949	23923	31898	39872	47847	55821	63796	79744	95694
17.87	11975	15967	23950	31934	39917	47901	55884	63867	79834	95801
17.88	11989	15985	23977	31969	39962	47954	55947	63939	79924	95908
17.89	12002	16003	24004	32005	40006	48008	56009	64010	80013	96015
17.90	12015	16020	24031	32041	40051	48061	56073	64082	80103	96122
17.91	12029	16038	24058	32077	40096	48115	56134	64154	80192	96229
17.92	12042	16056	24084	32113	40141	48169	56197	64226	80282	96336
17.93	12056	16074	24111	32148	40186	48223	56260	64297	80371	96443
17.94	12069	16092	24138	32184	40230	48277	56323	64369	80461	96550
17.95	12083	16110	24165	32220	40275	48330	56386	64440	80551	96657
17.96	12096	16128	24191	32256	40320	48384	56448	64512	80640	96764
17.97	12110	16146	24219	32292	40365	48438	56511	64584	80730	96871
17.98	12123	16164	24246	32328	40410	48492	56574	64656	80820	96978
17.99	12136	16182	24273	32365	40455	48546	56638	64728	80910	97085
18.00	12150	16200	24300	32400	40500	48600	56700	64800	81000	97200

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
18'01	12169	16218	24827	32436	40545	48654	56763	64872	81090	97308
18'02	12177	16236	24854	32472	40590	48708	56826	64944	81160	97416
18'03	12191	16254	24881	32508	40635	48762	56889	65016	81270	97534
18'04	12204	16272	24908	32544	40680	48816	56952	65088	81360	97632
18'05	12218	16290	24935	32580	40725	48870	57015	65160	81451	97741
18'06	12231	16308	24962	32616	40770	48925	57079	65238	81541	97849
18'07	12245	16326	24989	32652	40816	48979	57142	65306	81631	97957
18'08	12258	16344	25016	32688	40861	49038	57205	65377	81722	98066
18'09	12272	16362	25044	32725	40906	49087	57268	65450	81812	98174
18'10	12286	16380	25071	32761	40961	49141	57332	65522	81902	98283
18'11	12299	16399	25098	32797	40996	49195	57395	65594	81993	98392
18'12	12313	16417	25125	32833	41042	49250	57459	65667	82084	98500
18'13	12326	16436	25152	32870	41087	49315	57523	65739	82174	98609
18'14	12340	16455	25179	32906	41132	49359	57585	65811	82265	98718
18'15	12354	16471	25207	32942	41178	49415	57649	65884	82356	98827
18'16	12367	16489	25234	32979	41223	49468	57712	65957	82446	98936
18'17	12381	16507	25261	33014	41269	49522	57776	66029	82537	99045
18'18	12394	16526	25288	33051	41314	49577	57840	66102	82628	99154
18'19	12408	16544	25316	33088	41359	49631	57903	66175	82719	99263
18'20	12421	16562	25343	33124	41405	49686	57967	66248	82810	99372
18'21	12435	16580	25370	33160	41450	49741	58031	66321	82901	99481
18'22	12449	16598	25398	33197	41496	49795	58094	66394	82992	99591
18'23	12462	16617	25425	33233	41542	49850	58158	66467	83083	99700
18'24	12476	16635	25452	33270	41587	49905	58222	66540	83174	99809
18'25	12490	16653	25480	33306	41633	49959	58286	66612	83265	99919
18'26	12504	16671	25507	33343	41678	50014	58350	66686	83356	100028
18'27	12517	16690	25534	33379	41724	50069	58414	66759	83446	100138
18'28	12531	16708	25562	33416	41770	50124	58478	66832	83537	100248
18'29	12545	16726	25589	33452	41815	50179	58542	66905	83628	100357
18'30	12558	16744	25617	33489	41861	50235	58606	66978	83722	100467
18'31	12572	16763	25644	33526	41907	50288	58670	67051	83814	100577
18'32	12586	16781	25672	33562	41953	50343	58734	67124	83906	100687
18'33	12600	16799	25700	33599	41999	50398	58798	67198	83997	100797
18'34	12613	16818	25727	33636	42045	50453	58862	67271	84087	100907
18'35	12627	16836	25754	33672	42090	50508	58926	67344	84181	101017
18'36	12641	16854	25782	33709	42136	50563	58991	67418	84272	101127
18'37	12655	16873	25809	33746	42182	50619	59055	67491	84364	101237
18'38	12669	16891	25837	33782	42228	50674	59119	67565	84456	101347
18'39	12682	16910	25864	33819	42274	50728	59184	67638	84548	101458
18'40	12696	16928	25892	33856	42320	50784	59248	67712	84640	101568
18'41	12710	16946	25920	33893	42366	50839	59312	67786	84732	101678
18'42	12724	16965	25947	33930	42412	50894	59377	67859	84824	101789
18'43	12737	16983	25975	33966	42458	50950	59441	67933	84916	101899
18'44	12751	17002	26002	34003	42504	51005	59505	68007	85008	102010
18'45	12765	17020	26030	34040	42550	51060	59570	68080	85101	102121
18'46	12779	17039	26058	34077	42596	51116	59635	68154	85193	102231
18'47	12793	17057	26086	34114	42642	51171	59700	68228	85285	102342
18'48	12807	17076	26113	34151	42688	51227	59764	68303	85378	102453
18'49	12821	17094	26141	34188	42735	51282	59829	68378	85470	102564
18'50	12835	17113	26169	34225	42781	51337	59894	68453	85562	102675

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	3:1	2½:1	2:1	1½:1	1:1	¾:1	⅔:1	⅕:1	⅓:1
18:51	12648	17181	25696	34969	42627	51393	59959	68534	85855	102786
18:52	12662	17160	25724	34999	42674	51449	60028	68608	85878	102807
18:53	12676	17168	25752	34836	42920	51504	60088	68672	85840	102806
18:54	12890	17187	25780	34378	42966	51560	60178	68746	85938	103119
18:55	12904	17206	25808	34410	43013	51616	60218	68820	86026	103321
18:56	12918	17224	25836	34447	43059	51671	60288	68895	86118	103543
18:57	12932	17242	25863	34484	43106	51727	60348	68969	86211	103453
18:58	12946	17261	25891	34522	43152	51782	60413	69045	86304	103665
18:59	12960	17279	25919	34559	43198	51838	60478	69118	86397	103676
18:60	12973	17298	25947	34596	43245	51894	60543	69192	86490	103788
18:61	12987	17317	25975	34633	43291	51950	60608	69266	86583	103900
18:62	13001	17336	26003	34670	43338	52006	60673	69341	86676	104011
18:63	13015	17351	26031	34708	43385	52062	60738	69415	86769	104123
18:64	13029	17372	26059	34745	43431	52117	60804	69490	86862	104235
18:65	13043	17391	26087	34782	43478	52173	60869	69564	86956	104347
18:66	13057	17410	26115	34820	43524	52229	60934	69639	87049	104459
18:67	13071	17428	26143	34857	43571	52285	61000	69714	87142	104571
18:68	13085	17447	26171	34894	43618	52341	61065	69788	87236	104683
18:69	13099	17466	26199	34932	43664	52397	61130	69863	87329	104795
18:70	13113	17484	26227	34969	43711	52453	61196	69938	87422	104907
18:71	13127	17503	26255	35006	43758	52510	61261	70013	87516	105020
18:72	13141	17522	26283	35044	43806	52568	61327	70088	87610	105132
18:73	13155	17541	26311	35081	43852	52622	61392	70163	87708	105244
18:74	13170	17559	26339	35119	43898	52678	61458	70238	87797	105356
18:75	13184	17578	26367	35156	43945	52734	61523	70313	87891	105469
18:76	13198	17597	26395	35194	43992	52791	61589	70388	87984	105581
18:77	13212	17616	26423	35231	44039	52847	61655	70463	88078	105694
18:78	13226	17634	26452	35269	44086	52903	61720	70538	88172	105807
18:79	13240	17653	26480	35306	44133	52960	61786	70613	88266	105919
18:80	13254	17672	26508	35344	44180	53016	61852	70688	88360	106032
18:81	13268	17691	26536	35382	44227	53072	61918	70763	88454	106145
18:82	13282	17710	26564	35419	44274	53129	61984	70838	88548	106258
18:83	13296	17728	26592	35457	44321	53185	62050	70913	88642	106371
18:84	13310	17747	26621	35495	44368	53242	62116	70988	88736	106484
18:85	13324	17766	26649	35532	44415	53298	62181	71063	88831	106597
18:86	13338	17785	26677	35570	44462	53355	62247	71138	88925	106710
18:87	13352	17804	26706	35608	44510	53412	62313	71213	89020	106823
18:88	13366	17823	26734	35645	44557	53468	62380	71289	89114	106936
18:89	13380	17842	26763	35683	44604	53525	62446	71364	89208	107050
18:90	13394	17860	26791	35721	44651	53581	62512	71439	89303	107163
18:91	13410	17879	26819	35759	44698	53638	62578	71513	89397	107276
18:92	13424	17898	26849	35797	44745	53695	62644	71588	89490	107389
18:93	13438	17917	26876	35834	44793	53752	62710	71663	89584	107502
18:94	13453	17936	26904	35872	44840	53809	62777	71738	89678	107615
18:95	13466	17955	26933	35910	44888	53865	62843	71813	89772	107728
18:96	13481	17974	26961	35948	44935	53922	62909	71888	89870	107841
18:97	13495	17993	26990	35986	44983	53979	62976	71963	89967	107954
18:98	13509	18012	27018	36024	45030	54036	63042	72038	90065	108067
18:99	13523	18031	27046	36062	45077	54093	63109	72113	90163	108180
19:00	13537	18050	27075	36100	45125	54150	63175	72188	90260	108293

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
19'01	13552	18069	27103	36138	45172	54207	63242	72276	81310	90345
19'02	13566	18088	27132	36176	45220	54264	63308	72352	81396	90440
19'03	13580	18107	27161	36214	45268	54308	63352	72400	81440	90484
19'04	13595	18126	27189	36252	45315	54352	63400	72450	81490	90530
19'05	13609	18145	27218	36290	45363	54400	63450	72500	81540	90580
19'06	13623	18164	27246	36328	45410	54449	63500	72550	81590	90630
19'07	13637	18183	27275	36366	45458	54498	63550	72600	81640	90680
19'08	13652	18202	27303	36405	45506	54547	63600	72650	81690	90730
19'09	13666	18221	27332	36443	45555	54596	63650	72700	81740	90780
19'10	13680	18240	27361	36481	45603	54645	63700	72750	81790	90830
19'11	13695	18260	27389	36519	45652	54694	63750	72800	81840	90880
19'12	13709	18279	27418	36557	45700	54743	63800	72850	81890	90930
19'13	13723	18298	27447	36596	45749	54792	63850	72900	81940	90980
19'14	13738	18317	27475	36634	45798	54841	63900	72950	81990	91030
19'15	13752	18336	27504	36672	45847	54890	63950	73000	82040	91080
19'16	13766	18355	27533	36711	45896	54939	64000	73050	82090	91130
19'17	13781	18374	27562	36749	45945	54988	64050	73100	82140	91180
19'18	13795	18393	27591	36787	45994	55037	64100	73150	82190	91230
19'19	13810	18413	27619	36826	46043	55086	64150	73200	82240	91280
19'20	13824	18432	27648	36864	46092	55135	64200	73250	82290	91330
19'21	13838	18451	27677	36902	46141	55184	64250	73300	82340	91380
19'22	13853	18470	27706	36941	46190	55233	64300	73350	82390	91430
19'23	13867	18489	27734	36979	46239	55282	64350	73400	82440	91480
19'24	13882	18508	27763	37018	46288	55331	64400	73450	82490	91530
19'25	13896	18528	27792	37056	46337	55380	64450	73500	82540	91580
19'26	13911	18547	27821	37095	46386	55429	64500	73550	82590	91630
19'27	13925	18567	27850	37134	46435	55478	64550	73600	82640	91680
19'28	13939	18586	27879	37173	46484	55527	64600	73650	82690	91730
19'29	13954	18605	27908	37212	46533	55576	64650	73700	82740	91780
19'30	13968	18624	27937	37251	46582	55625	64700	73750	82790	91830
19'31	13983	18644	27966	37289	46631	55674	64750	73800	82840	91880
19'32	13997	18663	27995	37328	46680	55723	64800	73850	82890	91930
19'33	14012	18682	28024	37366	46729	55772	64850	73900	82940	91980
19'34	14026	18702	28053	37405	46778	55821	64900	73950	82990	92030
19'35	14041	18721	28082	37444	46827	55870	64950	74000	83040	92080
19'36	14055	18740	28111	37483	46876	55919	65000	74050	83090	92130
19'37	14070	18760	28140	37522	46925	55968	65050	74100	83140	92180
19'38	14084	18779	28169	37561	46974	56017	65100	74150	83190	92230
19'39	14099	18799	28198	37600	47023	56066	65150	74200	83240	92280
19'40	14113	18818	28227	37639	47072	56115	65200	74250	83290	92330
19'41	14128	18837	28256	37678	47121	56164	65250	74300	83340	92380
19'42	14143	18857	28285	37717	47170	56213	65300	74350	83390	92430
19'43	14157	18876	28314	37756	47219	56262	65350	74400	83440	92480
19'44	14172	18896	28343	37795	47268	56311	65400	74450	83490	92530
19'45	14186	18915	28372	37834	47317	56360	65450	74500	83540	92580
19'46	14201	18935	28401	37873	47366	56409	65500	74550	83590	92630
19'47	14216	18954	28430	37912	47415	56458	65550	74600	83640	92680
19'48	14230	18974	28459	37951	47464	56507	65600	74650	83690	92730
19'49	14245	18993	28488	37990	47513	56556	65650	74700	83740	92780
19'50	14259	19013	28517	38029	47562	56605	65700	74750	83790	92830

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
19.51	14274	19039	28548	88064	47580	57096	66612	76128	98160	114192
19.52	14289	19052	28577	88108	47629	57165	66680	76206	98258	114339
19.53	14303	19071	28607	88142	47678	57218	66749	76284	98385	114436
19.54	14318	19091	28636	88181	47726	57272	66817	76362	98453	114543
19.55	14333	19110	28665	88220	47775	57330	66885	76440	98551	114661
19.56	14347	19130	28695	88258	47824	57389	66953	76517	98648	114778
19.57	14362	19149	28724	88298	47873	57438	67022	76597	98746	114875
19.58	14377	19169	28753	88338	47922	57490	67091	76675	98844	114980
19.59	14391	19188	28783	88377	47971	57545	67159	76754	98942	115080
19.60	14406	19208	28812	88416	48020	57604	67228	76832	99040	115248
19.61	14421	19228	28841	88456	48069	57663	67298	76912	99138	115366
19.62	14435	19247	28871	88494	48118	57723	67366	76989	99236	115483
19.63	14450	19267	28900	88534	48167	57781	67434	77067	99334	115601
19.64	14465	19286	28930	88573	48216	57839	67503	77146	99432	115719
19.65	14480	19306	28959	88612	48265	57898	67571	77224	99531	115837
19.66	14494	19326	28989	88652	48314	57957	67640	77303	99629	115955
19.67	14509	19345	29018	88691	48363	58016	67709	77382	99727	116073
19.68	14524	19365	29048	88730	48413	58075	67778	77460	99826	116191
19.69	14539	19385	29077	88770	48462	58134	67847	77539	99924	116309
19.70	14553	19404	29107	88809	48511	58193	67916	77618	97022	116427
19.71	14568	19424	29136	88848	48560	58253	67985	77697	97121	116545
19.72	14583	19444	29166	88888	48610	58312	68054	77776	97220	116664
19.73	14598	19464	29195	88927	48659	58371	68123	77855	97318	116782
19.74	14613	19483	29225	88967	48708	58430	68192	77934	97417	116900
19.75	14627	19503	29255	89006	48758	58489	68261	78013	97516	117019
19.76	14642	19523	29284	89046	48807	58548	68330	78092	97614	117137
19.77	14657	19543	29314	89085	48857	58607	68399	78171	97713	117256
19.78	14672	19562	29344	89125	48906	58667	68468	78250	97812	117375
19.79	14687	19582	29373	89164	48955	58727	68538	78329	97911	117493
19.80	14701	19602	29403	89204	49005	58786	68607	78408	98010	117612
19.81	14716	19622	29433	89244	49054	58845	68676	78487	98109	117731
19.82	14731	19642	29462	89283	49104	58905	68746	78567	98208	117850
19.83	14746	19661	29492	89323	49154	58964	68815	78646	98307	117969
19.84	14761	19681	29522	89363	49203	59024	68884	78725	98406	118088
19.85	14776	19701	29552	89402	49253	59083	68954	78804	98505	118207
19.86	14791	19721	29582	89442	49302	59143	69023	78884	98605	118326
19.87	14806	19741	29611	89482	49352	59202	69093	78963	98704	118445
19.88	14821	19761	29641	89522	49402	59262	69163	79043	98804	118564
19.89	14835	19781	29671	89561	49451	59322	69232	79122	98903	118683
19.90	14850	19800	29701	89601	49501	59381	69302	79202	99002	118802
19.91	14865	19820	29731	89641	49551	59441	69371	79282	99102	118921
19.92	14880	19840	29760	89681	49601	59501	69441	79361	99202	119040
19.93	14895	19860	29790	89720	49651	59561	69511	79441	99301	119159
19.94	14910	19880	29820	89760	49701	59621	69581	79521	99401	119278
19.95	14925	19900	29850	89800	49750	59681	69650	79601	99501	119397
19.96	14940	19920	29880	89840	49800	59740	69720	79681	99601	119516
19.97	14955	19940	29910	89880	49850	59800	69790	79761	99701	119635
19.98	14970	19960	29940	89920	49900	59860	69860	79841	99801	119754
19.99	14985	19981	29970	89960	49950	59920	69930	79921	99901	119873
20.00	15000	20000	30000	90000	50000	60000	70000	80000	100000	120000

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
20'01	15015	20020	30039	40040	50050	60060	70070	80080	100100	120120
20'02	15030	20040	30060	40080	50100	60120	70140	80160	100200	120240
20'03	15045	20060	30090	40120	50150	60180	70210	80240	100300	120360
20'04	15060	20080	30120	40160	50200	60240	70280	80320	100400	120480
20'05	15075	20100	30150	40200	50250	60300	70350	80400	100500	120600
20'06	15090	20120	30180	40240	50300	60360	70420	80480	100600	120720
20'07	15105	20140	30210	40280	50350	60420	70490	80560	100700	120840
20'08	15120	20160	30240	40320	50400	60480	70560	80640	100800	120960
20'09	15135	20180	30270	40360	50450	60540	70630	80720	100900	121080
20'10	15150	20200	30300	40400	50500	60600	70700	80800	101000	121200
20'11	15165	20220	30330	40440	50550	60660	70770	80880	101100	121320
20'12	15180	20240	30360	40480	50600	60720	70840	80960	101200	121440
20'13	15195	20260	30390	40520	50650	60780	70910	81040	101300	121560
20'14	15210	20280	30420	40560	50700	60840	70980	81120	101400	121680
20'15	15225	20300	30450	40600	50750	60900	71050	81200	101500	121800
20'16	15240	20320	30480	40640	50800	60960	71120	81280	101600	121920
20'17	15255	20340	30510	40680	50850	61020	71160	81360	101700	122040
20'18	15270	20360	30540	40720	50900	61080	71260	81440	101800	122160
20'19	15285	20380	30570	40760	50950	61140	71360	81520	101900	122280
20'20	15300	20400	30600	40800	51000	61200	71400	81600	102000	122400
20'21	15315	20420	30630	40840	51050	61220	71470	81680	102100	122460
20'22	15330	20440	30660	40880	51100	61320	71540	81770	102200	122520
20'23	15345	20460	30690	40920	51150	61380	71610	81860	102300	122580
20'24	15360	20480	30720	40960	51200	61440	71690	81930	102400	122640
20'25	15375	20500	30750	41000	51250	61500	71760	82010	102500	122700
20'26	15390	20520	30780	41040	51300	61570	71830	82090	102600	122760
20'27	15405	20540	30810	41080	51350	61630	71900	82170	102700	122820
20'28	15420	20560	30840	41120	51400	61690	71970	82250	102800	122880
20'29	15435	20580	30870	41160	51450	61750	72040	82330	102900	122940
20'30	15450	20600	30900	41200	51500	61810	72110	82410	103000	123000
20'31	15465	20620	30930	41250	51550	61870	72180	82490	103100	123060
20'32	15480	20640	30960	41290	51600	61930	72250	82580	103200	123120
20'33	15495	20660	30990	41330	51650	61990	72320	82660	103300	123180
20'34	15510	20680	31020	41370	51700	62050	72400	82740	103400	123240
20'35	15525	20700	31050	41410	51750	62110	72470	82820	103500	123300
20'36	15540	20720	31080	41450	51800	62170	72540	82900	103600	123360
20'37	15555	20740	31120	41490	51850	62230	72610	82980	103700	123420
20'38	15570	20760	31150	41530	51900	62290	72680	83060	103800	123480
20'39	15585	20780	31180	41570	51950	62350	72750	83140	103900	123540
20'40	15600	20810	31210	41610	52000	62420	72820	83220	104000	123600
20'41	15615	20830	31240	41650	52050	62480	72890	83310	104100	123660
20'42	15630	20860	31270	41690	52100	62540	72970	83390	104200	123720
20'43	15645	20890	31300	41730	52150	62600	73040	83470	104300	123780
20'44	15660	20920	31330	41770	52200	62660	73110	83550	104400	123840
20'45	15675	20950	31360	41810	52250	62720	73180	83630	104500	123900
20'46	15690	20980	31390	41850	52300	62780	73250	83710	104600	123960
20'47	15705	21010	31420	41890	52350	62840	73320	83790	104700	124020
20'48	15720	21040	31450	41930	52400	62900	73390	83870	104800	124080
20'49	15735	21070	31480	41970	52450	62960	73470	83950	104900	124140
20'50	15750	21100	31510	42010	52500	63020	73540	84030	105000	124200

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
20'51	15775	21038	31549	42066	52582	63099	73616	84132	105165	126198
20'52	15790	21054	31580	42107	52634	63161	73687	84214	105268	126321
20'53	15806	21074	31611	42148	52685	63222	73759	84298	105370	126444
20'54	15821	21095	31642	42189	52736	63284	73831	84378	105478	126567
20'55	15836	21115	31673	42230	52788	63345	73903	84460	105576	126691
20'56	15852	21136	31704	42271	52839	63407	73975	84543	105675	126814
20'57	15867	21156	31734	42312	52891	63469	74047	84625	105781	126937
20'58	15883	21177	31765	42354	52942	63530	74119	84707	105884	127061
20'59	15898	21197	31796	42395	52993	63592	74191	84790	105987	127184
20'60	15913	21218	31827	42436	53045	63654	74263	84872	106090	127308
20'61	15929	21239	31858	42477	53096	63716	74335	84954	106193	127432
20'62	15944	21260	31889	42519	53148	63778	74408	85038	106297	127555
20'63	15960	21280	31920	42560	53200	63840	74480	85119	106399	127679
20'64	15976	21300	31951	42601	53251	63901	74552	85202	106502	127803
20'65	15991	21321	31982	42642	53303	63963	74624	85284	106605	127927
20'66	16006	21342	32013	42684	53354	64025	74696	85367	106709	128051
20'67	16022	21362	32044	42725	53406	64087	74769	85450	106813	128175
20'68	16037	21383	32075	42766	53458	64149	74841	85532	106915	128299
20'69	16053	21404	32106	42808	53510	64211	74913	85615	107019	128423
20'70	16068	21424	32137	42849	53561	64273	74986	85698	107123	128547
20'71	16084	21445	32168	42890	53613	64336	75058	85781	107226	128671
20'72	16099	21466	32199	42932	53665	64398	75131	85864	107330	128795
20'73	16115	21487	32230	42973	53717	64460	75203	85947	107433	128920
20'74	16131	21507	32261	43015	53768	64522	75276	86030	107537	129044
20'75	16146	21528	32292	43056	53819	64584	75348	86112	107641	129168
20'76	16162	21549	32323	43098	53872	64647	75421	86195	107744	129292
20'77	16177	21570	32354	43139	53924	64709	75494	86279	107848	129416
20'78	16193	21590	32386	43181	53976	64771	75566	86362	107952	129540
20'79	16208	21611	32417	43222	54027	64833	75639	86445	108056	129664
20'80	16224	21632	32448	43264	54080	64896	75712	86528	108160	129788
20'81	16240	21653	32479	43306	54132	64958	75785	86611	108264	129912
20'82	16256	21674	32510	43347	54184	65021	75858	86694	108368	130036
20'83	16271	21694	32542	43389	54236	65083	75931	86777	108472	130160
20'84	16286	21715	32573	43431	54288	65146	76003	86861	108576	130284
20'85	16302	21736	32604	43472	54340	65208	76076	86944	108681	130408
20'86	16318	21757	32636	43514	54392	65271	76149	87028	108785	130532
20'87	16333	21778	32667	43556	54445	65333	76222	87111	108889	130656
20'88	16349	21799	32698	43597	54497	65396	76296	87195	108993	130780
20'89	16365	21820	32729	43639	54549	65459	76369	87278	109098	130904
20'90	16380	21840	32761	43681	54601	65521	76442	87362	109202	131028
20'91	16396	21861	32792	43723	54653	65584	76515	87446	109307	131152
20'92	16412	21882	32823	43765	54706	65647	76588	87529	109411	131276
20'93	16427	21903	32855	43806	54758	65710	76661	87613	109516	131400
20'94	16443	21924	32886	43848	54810	65773	76735	87697	109621	131524
20'95	16459	21945	32918	43890	54863	65835	76808	87780	109726	131648
20'96	16475	21966	32949	43932	54915	65898	76881	87864	109831	131772
20'97	16491	21987	32981	43974	54968	65961	76955	87948	109935	131896
20'98	16506	22008	33012	44016	55020	66024	77028	88032	110040	132020
20'99	16522	22029	33044	44058	55072	66087	77102	88116	110145	132144
21'00	16537	22050	33075	44100	55125	66150	77175	88200	110250	132268

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
21'01	16553	22071	33106	44145	55177	66213	77249	88284	110355	132426
21'02	16560	22092	33188	44187	55220	66276	77322	88368	110460	132552
21'03	16568	22115	33170	44226	55283	66339	77396	88452	110565	132678
21'04	16576	22134	33201	44268	55336	66402	77469	88506	110670	132804
21'05	16586	22155	33233	44310	55388	66465	77543	88620	110776	132931
21'06	16593	22176	33264	44352	55440	66529	77617	88705	110881	133057
21'07	16604	22197	33296	44394	55493	66592	77690	88789	110986	133183
21'08	16604	22218	33327	44437	55546	66655	77764	88873	111093	133310
21'09	16608	22239	33359	44479	55598	66718	77838	88958	111197	133436
21'10	16606	22260	33391	44521	55651	66781	77912	89042	111302	133563
21'11	16711	22282	33422	44565	55704	66845	77986	89126	111408	133690
21'12	16727	22308	33454	44606	55757	66908	78060	89211	111514	133816
21'13	16743	22324	33486	44648	55810	66972	78133	89295	111619	133943
21'14	16759	22345	33517	44690	55862	67035	78207	89380	111725	134070
21'15	16776	22366	33549	44732	55915	67098	78281	89464	111831	134197
21'16	16790	22387	33581	44775	55968	67162	78355	89549	111936	134324
21'17	16806	22409	33613	44817	56021	67225	78430	89634	112042	134451
21'18	16822	22431	33644	44859	56074	67289	78504	89718	112148	134578
21'19	16838	22451	33676	44901	56127	67352	78578	89803	112254	134705
21'20	16854	22472	33708	44944	56180	67416	78652	89888	112360	134832
21'21	16870	22493	33740	44986	56233	67480	78726	89973	112466	134959
21'22	16886	22514	33772	45029	56286	67543	78800	90058	112572	135087
21'23	16902	22536	33803	45071	56339	67606	78875	90143	112678	135214
21'24	16918	22557	33835	45114	56392	67671	78949	90228	112784	135341
21'25	16934	22578	33867	45156	56445	67734	79023	90312	112891	135469
21'26	16950	22599	33899	45199	56498	67798	79098	90398	112997	135596
21'27	16966	22621	33931	45241	56551	67862	79172	90483	113103	135724
21'28	16981	22642	33963	45284	56605	67926	79247	90568	113210	135852
21'29	16997	22663	33995	45326	56658	67990	79321	90653	113316	135979
21'30	17013	22684	34027	45369	56711	68053	79396	90738	113422	136107
21'31	17029	22706	34059	45412	56764	68117	79470	90823	113529	136235
21'32	17045	22727	34091	45454	56816	68181	79545	90908	113636	136363
21'33	17061	22748	34123	45497	56871	68245	79620	90994	113742	136491
21'34	17077	22770	34155	45540	56924	68309	79694	91079	113849	136619
21'35	17093	22791	34187	45582	56978	68373	79769	91164	113956	136747
21'36	17109	22812	34219	45625	57031	68437	79844	91250	114062	136875
21'37	17125	22834	34251	45668	57085	68502	79918	91335	114169	137003
21'38	17141	22855	34283	45710	57138	68566	79993	91421	114276	137131
21'39	17157	22877	34315	45753	57191	68630	80068	91506	114383	137260
21'40	17173	22898	34347	45796	57245	68694	80143	91592	114490	137388
21'41	17189	22919	34379	45839	57298	68758	80218	91678	114597	137516
21'42	17206	22941	34411	45882	57352	68822	80293	91763	114704	137645
21'43	17222	22963	34443	45924	57406	68887	80368	91849	114811	137773
21'44	17238	22984	34476	45967	57459	68951	80443	91935	114918	137902
21'45	17254	23006	34508	46010	57513	69015	80518	92020	115026	138031
21'46	17270	23027	34540	46053	57566	69080	80593	92106	115133	138159
21'47	17286	23048	34572	46096	57620	69144	80668	92192	115240	138288
21'48	17302	23070	34604	46139	57674	69209	80743	92278	115348	138417
21'49	17318	23091	34636	46182	57727	69273	80818	92364	115456	138546
21'50	17334	23112	34669	46224	57781	69337	80893	92449	115563	138675

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
21:51	17850	23184	34701	46268	57836	69402	80969	92536	116870	188804
21:52	17867	23166	34733	46311	57899	69467	81044	92622	116778	188933
21:53	17883	23177	34766	46354	57948	69531	81120	92708	116836	189062
21:54	17899	23199	34798	46397	57996	69596	81195	92794	116893	189191
21:55	17915	23220	34830	46440	58050	69660	81270	92880	116951	189321
21:56	17931	23243	34863	46483	58104	69725	81346	92967	117008	189450
21:57	17947	23263	34896	46526	58158	69790	81421	93053	117066	189579
21:58	17964	23285	34927	46570	58213	69854	81497	93139	117124	189709
21:59	17980	23306	34960	46613	58266	69919	81573	93226	117182	189838
21:60	17996	23328	34992	46656	58320	69984	81648	93312	117240	189968
21:61	17513	23550	35024	46699	58374	70049	81724	93398	118748	140098
21:62	17529	23571	35057	46742	58429	70114	81799	93485	118856	140227
21:63	17545	23593	35089	46786	58483	70179	81875	93571	118964	140357
21:64	17561	23614	35122	46829	58538	70243	81951	93658	119072	140487
21:65	17577	23636	35154	46872	58593	70308	82026	93744	119181	140617
21:66	17593	23658	35187	46916	58644	70373	82103	93831	119289	140747
21:67	17610	23679	35219	46959	58699	70438	82178	93918	119397	140877
21:68	17626	23701	35252	47002	58753	70503	82254	94004	119506	141007
21:69	17642	23723	35284	47046	58807	70568	82330	94091	119614	141137
21:70	17658	23744	35317	47089	58861	70633	82406	94178	119722	141267
21:71	17675	23766	35349	47132	58915	70699	82482	94265	119831	141397
21:72	17691	23788	35382	47176	58970	70764	82558	94352	119940	141527
21:73	17707	23810	35414	47219	59024	70829	82634	94439	119948	141658
21:74	17724	23831	35447	47263	59078	70894	82710	94526	119957	141788
21:75	17740	23853	35480	47306	59133	70959	82786	94613	119966	141919
21:76	17756	23876	35513	47350	59187	71025	82862	94700	119974	142049
21:77	17772	23897	35545	47393	59242	71090	82938	94787	119983	142180
21:78	17789	23918	35578	47436	59296	71155	83014	94875	119992	142311
21:79	17805	23940	35610	47480	59350	71221	83091	94961	119999	142441
21:80	17821	23962	35643	47524	59405	71286	83167	95048	119999	142572
21:81	17838	23984	35676	47568	59459	71351	83243	95135	119999	142703
21:82	17854	24006	35708	47611	59514	71417	83320	95222	119999	142834
21:83	17871	24027	35741	47655	59569	71482	83396	95310	119999	142965
21:84	17887	24049	35774	47699	59623	71548	83472	95397	119999	143096
21:85	17903	24071	35807	47742	59678	71613	83549	95484	119999	143227
21:86	17920	24093	35839	47786	59732	71679	83625	95572	119999	143358
21:87	17936	24115	35872	47830	59787	71745	83702	95659	119999	143489
21:88	17953	24137	35905	47873	59842	71810	83779	95747	119999	143620
21:89	17969	24159	35938	47917	59896	71876	83855	95834	119999	143752
21:90	17985	24180	35971	47961	59951	71941	83932	95922	119999	143883
21:91	18002	24202	36004	48005	60006	72007	84008	96010	120012	144014
21:92	18018	24224	36036	48049	60061	72073	84085	96097	120122	144145
21:93	18035	24246	36069	48093	60116	72139	84162	96185	120231	144277
21:94	18051	24268	36102	48138	60170	72205	84239	96273	120341	144409
21:95	18068	24290	36135	48183	60225	72270	84315	96360	120451	144541
21:96	18084	24312	36168	48228	60280	72336	84392	96448	120560	144673
21:97	18101	24334	36201	48273	60335	72402	84469	96536	120671	144805
21:98	18117	24356	36234	48318	60390	72468	84546	96623	120780	144937
21:99	18133	24378	36267	48363	60445	72534	84623	96711	120890	145069
22:00	18150	24400	36300	48408	60500	72600	84700	96800	121000	145200

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
22-01	18166	24222	86383	48444	60555	72666	84777	96888	131110	145332
22-02	18183	24244	86366	48488	60610	72732	84854	96976	131320	145464
22-03	18200	24266	86399	48532	60655	72798	84931	97064	131330	145596
22-04	18216	24288	86432	48576	60720	72864	85008	97153	131440	145728
22-05	18233	24310	86465	48620	60775	72930	85085	97240	131551	145861
22-06	18249	24332	86498	48664	60830	72997	85163	97329	131661	145993
22-07	18266	24354	86531	48708	60886	73063	85240	97417	131771	146125
22-08	18282	24376	86564	48752	60941	73129	85317	97505	131882	146258
22-09	18299	24398	86598	48797	60996	73195	85394	97594	131993	146390
22-10	18315	24420	86631	48841	61051	73261	85472	97682	132103	146523
22-11	18330	24443	86664	48885	61106	73328	85549	97770	132213	146656
22-12	18349	24465	86697	48929	61162	73394	85627	97859	132324	146788
22-13	18366	24487	86730	48974	61217	73461	85704	97947	132435	146921
22-14	18382	24509	86763	49018	61272	73527	85781	98036	132545	147054
22-15	18398	24531	86796	49062	61328	73593	85859	98124	132656	147187
22-16	18415	24553	86829	49107	61383	73660	85936	98213	132767	147320
22-17	18432	24575	86863	49151	61439	73726	86014	98302	132878	147453
22-18	18448	24598	86896	49195	61494	73793	86092	98390	132988	147586
22-19	18465	24620	86930	49239	61549	73859	86169	98478	133099	147719
22-20	18481	24642	86963	49284	61605	73926	86247	98566	133210	147852
22-21	18498	24664	86996	49328	61660	73993	86325	98657	133321	147985
22-22	18515	24686	87030	49373	61716	74059	86402	98746	133432	148118
22-23	18531	24709	87063	49417	61772	74126	86480	98835	133543	148252
22-24	18548	24731	87096	49462	61827	74193	86558	98924	133654	148385
22-25	18565	24753	87130	49506	61883	74260	86636	99012	133765	148518
22-26	18582	24775	87163	49551	61938	74326	86714	99102	133877	148652
22-27	18598	24798	87196	49595	61994	74393	86792	99191	133988	148785
22-28	18615	24820	87230	49640	62050	74460	86870	99280	134100	148920
22-29	18632	24842	87263	49684	62105	74527	86948	99369	134211	149053
22-30	18648	24864	87297	49729	62161	74593	87026	99458	134322	149187
22-31	18665	24887	87330	49774	62217	74660	87104	99547	134434	149321
22-32	18682	24909	87364	49818	62273	74727	87182	99636	134545	149454
22-33	18699	24931	87397	49863	62329	74794	87260	99726	134657	149588
22-34	18715	24954	87431	49908	62384	74861	87338	99815	134769	149722
22-35	18732	24976	87464	49952	62440	74928	87416	99904	134881	149857
22-36	18749	24998	87498	49997	62496	74995	87495	99994	134993	149991
22-37	18766	25021	87531	50042	62552	75062	87573	100083	135104	150125
22-38	18782	25043	87565	50086	62608	75130	87651	100173	135216	150259
22-39	18799	25066	87598	50131	62664	75197	87730	100262	135328	150393
22-40	18815	25088	87632	50176	62720	75264	87808	100352	135440	150528
22-41	18833	25110	87666	50221	62776	75331	87886	100442	135552	150662
22-42	18850	25133	87699	50266	62832	75398	87965	100531	135664	150797
22-43	18866	25155	87733	50310	62888	75466	88043	100621	135776	150931
22-44	18883	25178	87767	50355	62944	75533	88122	100711	135888	151066
22-45	18900	25200	87800	50400	63000	75600	88200	100800	136001	151201
22-46	18917	25223	87834	50445	63056	75668	88279	100890	136113	151335
22-47	18934	25245	87868	50490	63112	75735	88358	100980	136225	151471
22-48	18951	25268	87901	50535	63168	75803	88436	101070	136338	151605
22-49	18967	25290	87935	50580	63225	75870	88515	101160	136450	151740
22-50	18984	25312	87969	50625	63281	75937	88594	101250	136563	151875

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	2:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
22-51	19001	25335	38002	50670	63387	76005	88672	101340	126875	152010
22-52	19018	25358	38036	50715	63394	76078	88752	101430	126788	152145
22-53	19035	25380	38070	50760	63450	76140	88830	101520	126900	152280
22-54	19052	25408	38104	50805	63506	76208	88909	101610	127013	152415
22-55	19069	25425	38138	50850	63563	76275	88988	101700	127126	152551
22-56	19086	25448	38172	50895	63619	76343	89067	101791	127238	152686
22-57	19103	25470	38205	50940	63676	76411	89146	101881	127351	152820
22-58	19120	25498	38239	50985	63732	76478	89225	101971	127464	152957
22-59	19137	25515	38273	51031	63788	76546	89304	102062	127577	153092
22-60	19158	25538	38307	51076	63845	76614	89383	102152	127690	153228
22-61	19170	25561	38341	51121	63901	76682	89462	102242	127803	153363
22-62	19187	25588	38375	51166	63958	76750	89541	102335	127916	153499
22-63	19204	25606	38409	51212	64015	76818	89620	102423	128029	153635
22-64	19221	25628	38443	51257	64071	76885	89700	102514	128143	153771
22-65	19238	25651	38477	51302	64128	76953	89779	102604	128256	153907
22-66	19255	25674	38511	51348	64184	77021	89858	102695	128369	154043
22-67	19272	25696	38545	51393	64241	77089	89938	102785	128482	154179
22-68	19289	25719	38579	51438	64298	77157	90017	102876	128596	154315
22-69	19306	25742	38613	51484	64354	77225	90096	102967	128709	154451
22-70	19323	25764	38647	51529	64411	77293	90176	103058	128822	154587
22-71	19340	25787	38681	51574	64468	77362	90255	103149	128936	154723
22-72	19357	25810	38715	51620	64525	77430	90335	103240	129050	154860
22-73	19374	25833	38749	51665	64582	77498	90414	103331	129163	154996
22-74	19392	25855	38783	51711	64639	77566	90497	103422	129277	155132
22-75	19409	25878	38817	51756	64696	77634	90578	103512	129391	155268
22-76	19426	25901	38851	51802	64752	77703	90659	103604	129504	155405
22-77	19443	25924	38885	51847	64809	77771	90739	103695	129618	155542
22-78	19460	25946	38920	51893	64866	77839	90812	103785	129732	155679
22-79	19477	25969	38954	51938	64923	77908	90892	103877	129846	155815
22-80	19494	25992	38988	51984	64980	77976	90972	103968	129960	155952
22-81	19511	26015	39022	52030	65037	78044	91052	104059	130074	156089
22-82	19528	26038	39056	52075	65094	78113	91132	104150	130188	156226
22-83	19545	26060	39091	52120	65151	78181	91212	104241	130302	156363
22-84	19562	26083	39125	52167	65208	78250	91291	104333	130416	156500
22-85	19580	26106	39159	52212	65265	78318	91371	104424	130531	156637
22-86	19597	26129	39193	52258	65322	78387	91451	104516	130645	156774
22-87	19614	26152	39228	52304	65380	78456	91532	104607	130759	156911
22-88	19631	26175	39262	52349	65437	78524	91612	104699	130874	157048
22-89	19648	26198	39296	52395	65494	78593	91692	104790	130988	157186
22-90	19665	26220	39331	52441	65551	78661	91772	104882	131102	157323
22-91	19683	26243	39365	52487	65608	78730	91852	104974	131217	157460
22-92	19700	26266	39399	52533	65666	78799	91932	105065	131332	157598
22-93	19717	26289	39434	52578	65723	78868	92012	105157	131446	157735
22-94	19734	26312	39468	52624	65780	78937	92093	105248	131561	157873
22-95	19751	26335	39503	52670	65838	79005	92173	105340	131676	158011
22-96	19769	26358	39537	52716	65895	79074	92253	105432	131790	158148
22-97	19786	26381	39573	52762	65953	79143	92334	105524	131905	158286
22-98	19803	26404	39606	52808	66010	79212	92414	105616	132020	158424
22-99	19820	26427	39640	52854	66067	79281	92495	105708	132135	158562
23-00	19837	26450	39675	52900	66125	79350	92575	105800	132250	158700

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
23'01	19855	26478	39709	52946	66182	79419	92656	105892	119128
23'02	19872	26496	39744	52992	66240	79488	92736	105984	119176
23'03	19889	26519	39779	53038	66298	79557	92817	106076	119214
23'04	19907	26542	39813	53084	66355	79626	92897	106168	119252
23'05	19924	26565	39848	53130	66413	79695	92978	106260	119291
23'06	19941	26588	39882	53176	66470	79765	93059	106353	119329
23'07	19958	26611	39917	53222	66528	79834	93139	106445	119367
23'08	19976	26634	39951	53269	66586	79903	93220	106537	119406
23'09	19993	26657	39986	53315	66643	79973	93301	106630	119444
23'10	20010	26680	40021	53361	66701	80041	93382	106722	119482
23'11	20028	26704	40055	53407	66759	80111	93463	106814	119520
23'12	20045	26727	40090	53453	66817	80180	93544	106907	119558
23'13	20062	26750	40125	53500	66875	80250	93624	106999	119596
23'14	20080	26773	40159	53546	66932	80319	93705	107092	119633
23'15	20097	26796	40194	53592	66990	80388	93786	107184	119671
23'16	20114	26819	40229	53639	67048	80458	93867	107277	119709
23'17	20132	26842	40264	53685	67106	80527	93949	107370	119747
23'18	20149	26865	40299	53731	67164	80597	94030	107462	119785
23'19	20167	26888	40333	53778	67222	80666	94111	107555	119823
23'20	20184	26912	40368	53824	67280	80736	94192	107648	119861
23'21	20201	26935	40403	53870	67338	80806	94273	107741	119899
23'22	20217	26958	40438	53917	67396	80875	94354	107834	119937
23'23	20236	26982	40472	53963	67454	80945	94434	107927	119975
23'24	20254	27005	40507	54010	67512	81015	94515	108020	120013
23'25	20271	27028	40542	54056	67570	81084	94595	108112	120051
23'26	20289	27051	40577	54103	67628	81154	94680	108206	120089
23'27	20306	27075	40612	54149	67687	81224	94761	108299	120127
23'28	20323	27098	40647	54196	67745	81294	94843	108392	120165
23'29	20341	27121	40682	54242	67803	81364	94924	108485	120203
23'30	20358	27144	40717	54289	67861	81433	95006	108578	120241
23'31	20376	27168	40752	54336	67919	81503	95087	108671	120279
23'32	20393	27191	40787	54382	67978	81573	95169	108764	120317
23'33	20411	27214	40822	54429	68036	81643	95251	108857	120355
23'34	20428	27238	40857	54476	68094	81713	95332	108950	120393
23'35	20446	27261	40892	54522	68153	81783	95414	109043	120431
23'36	20463	27284	40927	54569	68211	81853	95496	109136	120469
23'37	20481	27308	40962	54616	68270	81924	95577	109229	120507
23'38	20498	27331	40997	54663	68328	81994	95659	109322	120545
23'39	20516	27355	41032	54710	68386	82064	95741	109415	120583
23'40	20533	27378	41067	54756	68445	82134	95823	109508	120621
23'41	20551	27401	41102	54803	68503	82204	95905	109601	120659
23'42	20569	27425	41137	54850	68562	82274	95987	109694	120697
23'43	20586	27448	41172	54896	68621	82345	96069	109787	120735
23'44	20604	27472	41208	54943	68679	82415	96151	109880	120773
23'45	20621	27495	41243	54990	68737	82486	96233	109973	120811
23'46	20639	27519	41278	55037	68796	82556	96315	110074	120849
23'47	20657	27542	41313	55084	68855	82626	96397	110168	120887
23'48	20674	27566	41348	55131	68914	82697	96479	110261	120925
23'49	20692	27590	41383	55178	68971	82767	96561	110354	120963
23'50	20710	27613	41418	55225	69029	82837	96644	110448	121001

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	2:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
2351	20727	27686	41454	55272	69090	82908	96726	110544	138180	165816
2352	20746	27660	41489	55319	69149	82979	96808	110638	138298	165957
2353	20762	27683	41525	55366	69208	83049	96891	110732	138415	166093
2354	20780	27707	41560	55413	69266	83120	96979	110826	138533	166230
2355	20798	27730	41595	55460	69325	83191	97055	110920	138651	166365
2356	20816	27754	41631	55507	69384	83261	97138	111015	138768	166502
2357	20835	27777	41666	55554	69443	83332	97220	111109	138886	166638
2358	20851	27801	41701	55602	69502	83402	97308	111203	139004	166780
2359	20868	27824	41737	55649	69561	83473	97385	111298	139122	166924
2360	20886	27848	41772	55696	69620	83544	97468	111392	139240	167068
2361	20904	27872	41807	55743	69679	83615	97551	111486	139358	167210
2362	20921	27895	41843	55790	69738	83686	97633	111581	139476	167371
2363	20939	27919	41878	55838	69797	83757	97717	111675	139594	167513
2364	20957	27942	41914	55885	69856	83827	97799	111770	139712	167655
2365	20975	27966	41949	55932	69915	83898	97881	111864	139831	167797
2366	20992	27990	41985	55980	69974	83969	97964	111959	139949	167939
2367	21010	28013	42020	56027	70034	84040	98047	112054	140067	168081
2368	21028	28037	42056	56074	70093	84111	98130	112148	140185	168223
2369	21046	28061	42091	56122	70152	84182	98213	112243	140304	168365
2370	21063	28084	42127	56169	70211	84253	98296	112338	140422	168507
2371	21081	28108	42162	56216	70270	84325	98379	112433	140541	168649
2372	21099	28132	42198	56264	70330	84396	98462	112528	140660	168792
2373	21117	28156	42235	56311	70389	84467	98545	112623	140778	168934
2374	21135	28179	42269	56359	70448	84538	98628	112718	140897	169076
2375	21153	28203	42305	56406	70508	84609	98711	112812	141016	169219
2376	21170	28227	42340	56454	70567	84681	98794	112908	141135	169361
2377	21188	28251	42377	56501	70628	84752	98877	113003	141255	169504
2378	21206	28274	42412	56549	70686	84824	98960	113098	141374	169648
2379	21224	28298	42447	56596	70745	84895	99044	113193	141493	169792
2380	21241	28322	42485	56644	70805	84966	99127	113288	141612	169935
2381	21259	28344	42519	56688	70862	85037	99206	113375	141735	170075
2382	21277	28370	42554	56739	70924	85109	99294	113478	141848	170218
2383	21295	28395	42590	56797	70984	85180	99387	113594	141967	170361
2384	21313	28417	42626	56855	71043	85252	99460	113669	142086	170504
2385	21331	28441	42662	56912	71103	85323	99544	113764	142208	170647
2386	21349	28465	42697	56969	71163	85395	99627	113860	142325	170790
2387	21367	28489	42733	57028	71223	85467	99711	113955	142444	170933
2388	21385	28513	42769	57085	71282	85538	99796	114051	142564	171076
2389	21403	28537	42805	57143	71341	85610	99878	114146	142683	171220
2390	21420	28560	42841	57191	71401	85681	99962	114242	142802	171363
2391	21438	28584	42877	57249	71461	85753	100045	114338	142922	171506
2392	21456	28608	42912	57307	71521	85825	100129	114433	143042	171650
2393	21474	28633	42948	57364	71581	85897	100215	114529	143161	171793
2394	21492	28656	42984	57421	71640	85969	100297	114625	143280	171937
2395	21510	28680	43020	57478	71700	86040	100380	114720	143401	172081
2396	21528	28704	43056	57535	71760	86112	100464	114816	143521	172224
2397	21546	28728	43092	57592	71820	86184	100548	114912	143640	172368
2398	21564	28752	43128	57649	71880	86256	100632	115009	143760	172512
2399	21582	28776	43164	57706	71940	86328	100716	115104	143880	172656
2400	21600	28800	43200	57763	72000	86400	100800	115200	144000	172800

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
24'01	21618	28824	43286	57648	72060	86472	100884	115296	144120	172944
24'02	21636	28848	43272	57696	72120	86444	100968	115392	144240	173088
24'03	21654	28872	43308	57744	72180	86616	101052	115488	144360	173232
24'04	21672	28896	43344	57792	72240	86688	101136	115584	144480	173376
24'05	21690	28920	43380	57840	72300	86760	101220	115680	144600	173520
24'06	21708	28944	43416	57888	72360	86832	101305	115777	144721	173665
24'07	21726	28968	43452	57936	72420	86905	101389	115873	144841	173809
24'08	21744	28992	43488	57984	72481	86977	101473	115969	144962	173954
24'09	21762	29016	43525	58032	72541	87049	101557	116066	145082	174098
24'10	21780	29040	43561	58081	72601	87121	101642	116162	145202	174243
24'11	21798	29065	43597	58129	72662	87194	101726	116258	145323	174388
24'12	21816	29089	43633	58177	72722	87266	101811	116355	145443	174532
24'13	21835	29113	43669	58226	72782	87339	101896	116451	145564	174677
24'14	21853	29137	43705	58274	72842	87411	101979	116548	145685	174822
24'15	21871	29161	43742	58322	72902	87483	102064	116644	145806	174967
24'16	21889	29185	43778	58371	72963	87556	102148	116741	145926	175112
24'17	21907	29209	43814	58419	73024	87628	102233	116838	146047	175257
24'18	21925	29233	43850	58467	73084	87701	102318	116934	146168	175402
24'19	21943	29258	43887	58516	73145	87772	102402	117031	146289	175546
24'20	21961	29282	43923	58564	73206	87846	102487	117128	146410	175692
24'21	21980	29306	43959	58612	73266	87919	102572	117225	146531	175837
24'22	21998	29330	43996	58661	73326	87991	102656	117322	146652	175982
24'23	22016	29355	44032	58709	73387	88064	102741	117419	146773	176128
24'24	22034	29379	44068	58758	73447	88137	102826	117516	146894	176273
24'25	22052	29403	44105	58806	73508	88209	102911	117612	147016	176419
24'26	22071	29427	44141	58855	73568	88282	102996	117710	147137	176564
24'27	22089	29452	44177	58905	73629	88355	103081	117807	147258	176710
24'28	22107	29476	44214	58952	73690	88428	103166	117904	147380	176856
24'29	22125	29500	44250	59000	73751	88501	103251	118001	147501	177001
24'30	22143	29524	44287	59049	73811	88573	103336	118098	147622	177147
24'31	22162	29549	44323	59098	73872	88646	103421	118195	147744	177293
24'32	22180	29573	44360	59146	73933	88719	103506	118292	147865	177439
24'33	22198	29597	44396	59195	73994	88792	103591	118390	147987	177585
24'34	22216	29622	44433	59244	74054	88865	103676	118487	148109	177731
24'35	22235	29646	44469	59292	74115	88938	103761	118584	148231	177877
24'36	22253	29670	44506	59341	74176	89011	103847	118682	148352	178023
24'37	22271	29695	44542	59390	74237	89085	103932	118779	148474	178169
24'38	22289	29719	44579	59438	74298	89158	104017	118877	148596	178315
24'39	22308	29744	44615	59487	74359	89231	104103	118974	148718	178462
24'40	22326	29768	44652	59536	74420	89304	104188	119072	148840	178608
24'41	22344	29792	44689	59585	74481	89377	104273	119170	148962	178754
24'42	22363	29817	44725	59634	74542	89450	104359	119267	149084	178901
24'43	22381	29841	44762	59683	74603	89524	104444	119365	149206	179047
24'44	22399	29866	44799	59731	74664	89597	104530	119463	149328	179194
24'45	22418	29890	44835	59780	74725	89670	104615	119560	149451	179341
24'46	22436	29915	44872	59829	74786	89744	104701	119658	149573	179487
24'47	22454	29939	44909	59879	74848	89817	104787	119756	149695	179634
24'48	22473	29964	44945	59927	74909	89891	104872	119854	149818	179781
24'49	22491	29988	44982	59976	74970	89964	104958	119952	149940	179928
24'50	22509	30012	45019	60026	75031	90037	105044	120050	150062	180075

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
24:51	22528	30037	45056	60074	75092	90111	105180	120148	150185	180222
24:52	22546	30062	45092	60123	75154	90185	105215	120246	150308	180369
24:53	22565	30086	45129	60172	75215	90258	105301	120344	150430	180516
24:54	22583	30111	45166	60222	75276	90332	105388	120448	150553	180663
24:55	22601	30135	45208	60270	75338	90405	105473	120540	150676	180811
24:56	22620	30160	45240	60319	75399	90478	105559	120639	150798	180956
24:57	22638	30184	45276	60368	75461	90558	105645	120737	150921	181105
24:58	22657	30209	45313	60418	75522	90626	105731	120835	151044	181253
24:59	22675	30233	45350	60467	75583	90700	105817	120934	151167	181400
24:60	22694	30258	45387	60516	75645	90774	105903	121032	151290	181548
24:61	22712	30283	45424	60565	75708	90848	105989	121130	151412	181696
24:62	22730	30307	45461	60614	75768	90922	106075	121229	151536	181843
24:63	22749	30332	45498	60664	75829	90996	106161	121327	151659	181991
24:64	22767	30356	45535	60713	75889	91069	106248	121426	151782	182139
24:65	22786	30381	45572	60762	75953	91143	106334	121524	151906	182287
24:66	22804	30406	45609	60812	76014	91217	106420	121623	152029	182435
24:67	22823	30430	45646	60861	76076	91291	106507	121722	152152	182583
24:68	22841	30455	45683	60910	76138	91365	106593	121820	152276	182731
24:69	22860	30480	45720	60960	76199	91439	106679	121919	152399	182879
24:70	22878	30504	45757	61009	76261	91513	106766	122018	152522	183027
24:71	22897	30529	45794	61058	76323	91588	106852	122117	152646	183175
24:72	22915	30554	45831	61108	76385	91662	106939	122216	152770	183324
24:73	22934	30579	45868	61157	76447	91736	107025	122315	152893	183472
24:74	22953	30603	45905	61207	76508	91810	107112	122414	153017	183620
24:75	22971	30628	45942	61256	76560	91884	107198	122512	153121	183769
24:76	22990	30653	45979	61306	76622	91959	107285	122612	153264	183917
24:77	23009	30678	46016	61355	76684	92033	107372	122711	153388	184066
24:78	23027	30702	46053	61405	76745	92107	107458	122810	153512	184215
24:79	23046	30727	46091	61454	76808	92182	107545	122909	153636	184363
24:80	23064	30752	46128	61504	76880	92256	107632	123008	153760	184512
24:81	23083	30777	46165	61554	76942	92330	107719	123107	153884	184661
24:82	23101	30802	46202	61603	77004	92405	107806	123206	154008	184810
24:83	23120	30826	46240	61653	77066	92479	107893	123305	154132	184959
24:84	23138	30851	46277	61703	77128	92554	107979	123405	154256	185108
24:85	23157	30876	46314	61753	77190	92628	108066	123504	154381	185257
24:86	23176	30901	46351	61803	77252	92703	108153	123604	154505	185406
24:87	23194	30926	46389	61852	77315	92778	108240	123703	154629	185555
24:88	23213	30951	46426	61901	77377	92852	108328	123803	154754	185704
24:89	23232	30976	46463	61951	77439	92927	108415	123902	154878	185854
24:90	23250	31000	46501	62001	77501	93001	108502	124002	155002	186003
24:91	23269	31025	46538	62051	77563	93076	108589	124102	155127	186152
24:92	23288	31050	46575	62101	77625	93151	108676	124201	155251	186302
24:93	23306	31073	46613	62150	77688	93226	108763	124301	155376	186451
24:94	23325	31100	46650	62200	77750	93301	108851	124401	155501	186601
24:95	23344	31125	46688	62250	77813	93375	108938	124500	155625	186751
24:96	23363	31150	46726	62300	77875	93450	109025	124600	155750	186900
24:97	23381	31175	46763	62350	77938	93525	109113	124700	155875	187050
24:98	23400	31200	46800	62400	78000	93600	109200	124800	156000	187200
24:99	23419	31225	46837	62450	78063	93675	109289	124900	156125	187350
25:00	23437	31250	46875	62500	78125	93750	109376	125000	156250	187500

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	$\frac{1}{2}$: 1	1 : 1	$1\frac{1}{2}$: 1	2 : 1	$2\frac{1}{2}$: 1	3 : 1	$3\frac{1}{2}$: 1	4 : 1	5 : 1	6 : 1
25'01	28456	31275	46912	62550	78187	93825	109463	125100	156375	187650
25'02	28478	31300	46960	62600	78260	93900	109550	125200	156500	187800
25'03	28494	31326	46988	62650	78313	93975	109688	125300	156625	187950
25'04	28513	31350	47025	62700	78375	94050	109725	125400	156750	188100
25'05	28531	31375	47063	62750	78438	94125	109813	125500	156875	188251
25'06	28550	31400	47100	62800	78500	94201	109901	125601	157001	188401
25'07	28569	31425	47138	62850	78563	94276	109988	125701	157136	188551
25'08	28588	31450	47175	62901	78626	94351	110076	125801	157262	188702
25'09	28607	31475	47213	62951	78689	94426	110164	125909	157377	188852
25'10	28625	31500	47251	63001	78751	94501	110252	126009	157502	189008
25'11	28644	31526	47288	63051	78814	94577	110340	126102	157628	189154
25'12	28663	31551	47326	63101	78877	94652	110428	126203	157754	189304
25'13	28682	31576	47364	63152	78940	94728	110515	126303	157879	189455
25'14	28701	31601	47401	63202	79003	94803	110603	126404	158005	189606
25'15	28720	31626	47439	63252	79065	94878	110691	126504	158131	189757
25'16	28738	31651	47477	63303	79128	94954	110779	126605	158256	189908
25'17	28757	31676	47515	63353	79191	95029	110868	126706	158382	190059
25'18	28776	31702	47552	63403	79254	95105	110956	126806	158508	190210
25'19	28795	31727	47590	63454	79317	95180	111044	126907	158634	190361
25'20	28814	31752	47628	63504	79380	95256	111132	127008	158760	190512
25'21	28833	31777	47666	63554	79443	95332	111220	127109	158886	190663
25'22	28852	31802	47704	63605	79506	95407	111308	127210	159012	190815
25'23	28871	31828	47741	63655	79569	95483	111397	127311	159138	190966
25'24	28890	31853	47779	63706	79632	95559	111485	127412	159264	191117
25'25	28909	31878	47817	63756	79695	95635	111573	127512	159391	191279
25'26	28928	31903	47855	63807	79758	95710	111661	127613	159516	191430
25'27	28946	31929	47893	63857	79822	95786	111750	127715	159643	191582
25'28	28965	31954	47931	63908	79885	95862	111839	127816	159770	191734
25'29	28984	31979	47969	63958	79948	95938	111927	127917	159896	191885
25'30	29003	32004	48007	64009	80011	96013	112016	128018	160022	192037
25'31	29022	32029	48045	64060	80074	96089	112104	128119	160149	192189
25'32	29041	32055	48083	64110	80138	96165	112193	128220	160275	192341
25'33	29060	32080	48121	64161	80201	96241	112282	128321	160402	192493
25'34	29079	32106	48159	64212	80264	96317	112370	128423	160529	192645
25'35	29098	32131	48197	64262	80328	96393	112459	128524	160656	192797
25'36	29117	32156	48235	64313	80391	96469	112548	128626	160783	192949
25'37	29136	32182	48273	64364	80455	96545	112636	128727	160910	193101
25'38	29155	32207	48311	64414	80518	96621	112725	128829	161036	193253
25'39	29174	32233	48349	64465	80581	96698	112814	128930	161163	193405
25'40	29193	32258	48387	64516	80645	96774	112903	129032	161290	193557
25'41	29211	32283	48425	64567	80708	96850	112992	129134	161417	193709
25'42	29230	32309	48463	64618	80773	96926	113080	129235	161544	193861
25'43	29249	32334	48501	64669	80836	97002	113169	129337	161671	194013
25'44	29268	32360	48540	64721	80899	97078	113258	129439	161798	194165
25'45	29287	32386	48578	64770	80963	97155	113346	129540	161926	194317
25'46	29306	32411	48616	64821	81026	97231	113435	129642	162053	194469
25'47	29325	32436	48654	64872	81090	97308	113524	129744	162180	194621
25'48	29344	32462	48692	64923	81153	97385	113613	129846	162307	194773
25'49	29363	32487	48731	64974	81217	97461	113702	129948	162435	194925
25'50	29382	32513	48769	65025	81281	97537	113791	130049	162562	195077

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
25-51	24408	32538	48807	65076	81315	97614	113833	130152	162690	195228
25-52	24421	32564	48845	65127	81409	97691	113972	130254	162818	195381
25-53	24442	32599	48884	65178	81473	97767	114062	130356	162948	195534
25-54	24461	32615	48923	65229	81536	97844	114151	130458	163073	195687
25-55	24480	32640	48960	65280	81600	97920	114240	130560	163201	195841
25-56	24499	32666	48999	65331	81664	97997	114330	130663	163328	195994
25-57	24518	32691	49037	65382	81728	98074	114419	130764	163456	196147
25-58	24538	32717	49075	65434	81792	98151	114509	130867	163584	196301
25-59	24557	32742	49114	65485	81856	98227	114598	130970	163712	196454
25-60	24576	32768	49153	65536	81920	98304	114688	131072	163840	196608
25-61	24595	32794	49190	65587	81984	98381	114778	131174	163968	196762
25-62	24614	32819	49229	65638	82048	98458	114867	131277	164096	196915
25-63	24634	32845	49267	65689	82112	98535	114957	131379	164224	197069
25-64	24653	32870	49305	65741	82176	98612	115046	131482	164351	197223
25-65	24672	32896	49344	65792	82240	98688	115136	131584	164481	197377
25-66	24691	32922	49383	65844	82304	98765	115226	131687	164609	197531
25-67	24711	32947	49421	65895	82369	98842	115315	131790	164737	197685
25-68	24730	32973	49460	65946	82433	98918	115406	131893	164866	197837
25-69	24749	32999	49498	65998	82497	98996	115496	131995	164994	197991
25-70	24768	33024	49537	66049	82561	99073	115586	132098	165122	198147
25-71	24787	33050	49575	66100	82625	99151	115676	132201	165251	198301
25-72	24807	33076	49614	66152	82690	99228	115766	132304	165380	198456
25-73	24826	33102	49652	66203	82754	99305	115856	132407	165508	198610
25-74	24846	33127	49691	66255	82818	99383	115946	132509	165637	198764
25-75	24865	33153	49730	66306	82883	99459	116036	132612	165766	198919
25-76	24884	33179	49768	66358	82947	99537	116126	132716	165894	199073
25-77	24903	33205	49807	66409	83012	99614	116216	132819	166023	199228
25-78	24923	33230	49846	66461	83076	99691	116306	132922	166151	199383
25-79	24942	33256	49884	66512	83140	99769	116397	133025	166280	199537
25-80	24961	33282	49923	66564	83205	99846	116487	133128	166410	199692
25-81	24981	33308	49962	66616	83269	99923	116577	133231	166539	199847
25-82	25000	33334	50000	66667	83334	100001	116668	133334	166668	200002
25-83	25020	33359	50039	66719	83398	100078	116758	133438	166797	200157
25-84	25039	33385	50078	66771	83463	100156	116848	133541	166926	200312
25-85	25058	33411	50117	66822	83528	100233	116939	133644	167056	200467
25-86	25078	33437	50155	66874	83592	100311	117029	133748	167185	200623
25-87	25097	33463	50194	66926	83657	100389	117120	133851	167314	200777
25-88	25117	33489	50233	66977	83722	100466	117211	133955	167444	200932
25-89	25136	33515	50272	67029	83786	100544	117301	134058	167573	201088
25-90	25155	33540	50311	67081	83851	100621	117392	134163	167702	201243
25-91	25175	33566	50350	67133	83916	100699	117482	134266	167832	201398
25-92	25194	33592	50388	67185	83981	100777	117573	134369	167962	201554
25-93	25214	33618	50427	67236	84046	100855	117664	134473	168091	201709
25-94	25233	33644	50466	67288	84110	100933	117755	134577	168221	201865
25-95	25253	33670	50505	67340	84175	101010	117845	134680	168351	202021
25-96	25272	33696	50544	67392	84240	101088	117936	134784	168480	202176
25-97	25292	33722	50583	67444	84305	101166	118027	134888	168610	202332
25-98	25311	33748	50622	67496	84370	101244	118118	134992	168740	202488
25-99	25330	33774	50661	67548	84435	101322	118209	135096	168870	202644
26-00	25350	33800	50700	67600	84500	101400	118300	135200	169000	202800

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	$\frac{1}{2} : 1$	1 : 1	$1\frac{1}{2} : 1$	2 : 1	$2\frac{1}{2} : 1$	3 : 1	$3\frac{1}{2} : 1$	4 : 1	5 : 1	6 : 1
26'01	25389	33826	50739	67652	84565	101478	118391	135304	169130	202956
26'02	25389	33852	50778	67704	84630	101556	118482	135408	169260	203112
26'03	25406	33878	50817	67756	84685	101634	118569	135512	169390	203268
26'04	25428	33904	50856	67808	84760	101712	118664	135616	169520	203424
26'05	25448	33930	50895	67860	84825	101790	118755	135720	169651	203581
26'06	25467	33956	50934	67912	84890	101869	118847	135825	169781	203737
26'07	25487	33982	50973	67964	84956	101947	118938	135929	169911	203893
26'08	25506	34008	51012	68017	85021	102025	119029	136034	170042	204050
26'09	25526	34034	51052	68069	85086	102103	119120	136138	170172	204206
26'10	25545	34060	51091	68121	85151	102181	119212	136242	170302	204363
26'11	25566	34087	51130	68173	85217	102260	119303	136346	170433	204520
26'12	25586	34113	51169	68225	85282	102338	119395	136451	170561	204676
26'13	25604	34139	51208	68278	85347	102417	119486	136555	170694	204833
26'14	25624	34165	51247	68330	85412	102495	119577	136660	170825	204990
26'15	25645	34191	51287	68382	85478	102573	119669	136764	170956	205147
26'16	25665	34217	51326	68435	85543	102652	119760	136869	171086	205304
26'17	25685	34245	51365	68487	85609	102730	119852	136974	171217	205461
26'18	25702	34270	51404	68539	85674	102809	119944	137078	171348	205618
26'19	25722	34296	51444	68592	85740	102887	120035	137183	171479	205775
26'20	25741	34322	51483	68644	85805	102966	120127	137288	171610	205932
26'21	25761	34348	51522	68696	85871	103045	120219	137393	171741	206089
26'22	25781	34374	51562	68749	85936	103123	120310	137498	171872	206247
26'23	25800	34401	51601	68801	86002	103202	120402	137603	172003	206404
26'24	25820	34427	51640	68854	86067	103281	120494	137708	172134	206561
26'25	25840	34453	51680	68906	86133	103359	120586	137812	172265	206719
26'26	25860	34479	51719	68959	86198	103438	120678	137916	172397	206876
26'27	25879	34506	51758	69011	86264	103517	120770	138023	172528	207034
26'28	25899	34532	51798	69064	86330	103596	120862	138128	172660	207192
26'29	25919	34558	51837	69116	86396	103675	120954	138233	172791	207349
26'30	25938	34584	51877	69169	86461	103753	121046	138338	172923	207507
26'31	25958	34611	51916	69222	86527	103832	121138	138443	173054	207665
26'32	25978	34637	51956	69274	86593	103911	121230	138548	173185	207823
26'33	25998	34665	51995	69327	86659	103990	121322	138654	173317	207981
26'34	26017	34690	52035	69380	86724	104069	121414	138759	173448	208139
26'35	26037	34716	52074	69432	86790	104148	121496	138864	173581	208297
26'36	26057	34742	52114	69485	86856	104226	121599	138970	173712	208455
26'37	26077	34769	52153	69538	86922	104305	121691	139075	173844	208613
26'38	26096	34795	52193	69590	86988	104384	121783	139181	173976	208771
26'39	26116	34822	52232	69643	87054	104463	121876	139286	174108	208929
26'40	26136	34848	52272	69696	87120	104544	121968	139392	174240	209088
26'41	26156	34874	52312	69749	87186	104623	122060	139498	174372	209246
26'42	26176	34901	52351	69802	87252	104702	122153	139603	174504	209405
26'43	26195	34927	52391	69854	87318	104782	122245	139709	174636	209563
26'44	26215	34954	52431	69907	87384	104861	122338	139815	174768	209722
26'45	26235	34980	52470	69960	87450	104940	122430	139920	174901	209881
26'46	26255	35007	52510	70013	87516	105020	122523	140026	175033	210039
26'47	26275	35033	52550	70066	87583	105099	122616	140132	175165	210198
26'48	26295	35060	52589	70119	87649	105179	122708	140238	175297	210357
26'49	26314	35086	52629	70172	87715	105258	122801	140344	175430	210516
26'50	26334	35112	52669	70225	87781	105337	122894	140450	175562	210675

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
26'51	26854	85189	52708	70278	87848	105417	122987	140556	175695	210884
26'52	26874	85166	52748	70381	87914	105497	123079	140662	175828	210998
26'53	26894	85192	52788	70484	87980	105576	123172	140768	175960	211162
26'54	26914	85219	52828	70587	88046	105656	123265	140874	176093	211311
26'55	26934	85245	52868	70690	88113	105735	123358	140980	176226	211471
26'56	26954	85272	52908	70793	88179	105815	123451	141087	176358	211630
26'57	26974	85298	52947	70896	88246	105895	123544	141193	176491	211789
26'58	26994	85325	52987	71000	88312	105975	123637	141299	176624	211949
26'59	27014	85351	53027	71103	88378	106055	123730	141406	176757	212108
26'60	27034	85378	53067	71206	88445	106135	123823	141512	176890	212268
26'61	27054	85405	53107	71309	88512	106214	123916	141618	177023	212428
26'62	27074	85431	53147	71412	88578	106294	124009	141725	177156	212587
26'63	27094	85458	53187	71515	88645	106374	124102	141831	177289	212747
26'64	27114	85484	53227	71618	88711	106453	124196	141938	177422	212907
26'65	27134	85511	53267	71721	88778	106533	124289	142044	177555	213067
26'66	27154	85538	53307	71824	88844	106613	124382	142151	177688	213227
26'67	27174	85564	53347	71927	88911	106693	124476	142258	177821	213387
26'68	27194	85591	53387	72030	88978	106773	124569	142364	177954	213547
26'69	27214	85618	53427	72133	89044	106853	124662	142471	178087	213707
26'70	27234	85644	53467	72236	89111	106933	124755	142578	178220	213867
26'71	27254	85671	53507	72339	89178	107014	124849	142685	178353	214027
26'72	27274	85698	53547	72442	89245	107094	124943	142792	178486	214187
26'73	27294	85725	53587	72545	89312	107174	125036	142899	178619	214347
26'74	27314	85751	53627	72648	89378	107254	125130	143006	178752	214507
26'75	27334	85778	53667	72751	89445	107334	125223	143112	178885	214667
26'76	27354	85805	53707	72854	89512	107415	125317	143220	179018	214827
26'77	27374	85832	53747	72957	89578	107495	125411	143327	179151	214987
26'78	27394	85858	53787	73060	89645	107575	125504	143434	179284	215147
26'79	27414	85885	53827	73163	89711	107655	125598	143541	179417	215307
26'80	27434	85912	53867	73266	89778	107735	125692	143648	179550	215467
26'81	27454	85939	53907	73369	89844	107816	125786	143755	179683	215627
26'82	27474	85966	53947	73472	89911	107897	125880	143862	179816	215787
26'83	27494	85992	53987	73575	89978	107977	125974	143969	179949	215947
26'84	27514	86019	54027	73678	90044	108058	126067	144077	180082	216107
26'85	27534	86046	54067	73781	90111	108138	126161	144184	180215	216267
26'86	27554	86073	54107	73884	90178	108219	126255	144292	180348	216427
26'87	27574	86100	54147	73987	90244	108300	126349	144399	180481	216587
26'88	27594	86127	54187	74090	90311	108380	126443	144507	180614	216747
26'89	27614	86154	54227	74193	90378	108461	126537	144614	180747	216907
26'90	27634	86180	54267	74296	90445	108541	126632	144722	180880	217067
26'91	27654	86207	54307	74399	90512	108622	126726	144830	181013	217227
26'92	27674	86234	54347	74502	90578	108703	126820	144937	181146	217387
26'93	27694	86261	54387	74605	90645	108784	126914	145045	181279	217547
26'94	27714	86288	54427	74708	90711	108865	127009	145153	181412	217707
26'95	27734	86315	54467	74811	90778	108945	127103	145260	181545	217867
26'96	27754	86342	54507	74914	90844	109026	127197	145368	181678	218027
26'97	27774	86369	54547	75017	90911	109107	127292	145476	181811	218187
26'98	27794	86396	54587	75120	90978	109188	127386	145584	181944	218347
26'99	27814	86423	54627	75223	91044	109269	127480	145692	182077	218507
27'00	27834	86450	54667	75326	91111	109350	127575	145800	182210	218667

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	2 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
27-01	27358	86477	54715	72954	91192	109431	127669	145908	182385	218862
27-02	27378	86504	54756	73008	91260	109512	127764	146016	182520	219024
27-03	27398	86531	54797	73062	91328	109593	127869	146121	182665	219186
27-04	27419	86558	54837	73116	91395	109674	127963	146232	182780	219348
27-05	27439	86585	54878	73170	91463	109756	128048	146340	182926	219511
27-06	27459	86612	54918	73224	91530	109837	128143	146449	183061	219673
27-07	27479	86639	54959	73278	91598	109918	128237	146559	183196	219835
27-08	27500	86666	54999	73333	91666	109999	128332	146665	183332	219998
27-09	27521	86693	55040	73387	91733	110080	128427	146774	183467	220160
27-10	27542	86720	55081	73441	91801	110161	128522	146882	183602	220323
27-11	27561	86748	55121	73495	91869	110243	128617	146990	183738	220486
27-12	27581	86775	55162	73549	91937	110324	128712	147100	183874	220648
27-13	27601	86802	55203	73604	92005	110406	128806	147207	184009	220811
27-14	27622	86829	55243	73658	92072	110487	128901	147316	184145	220974
27-15	27643	86856	55284	73712	92140	110568	129006	147424	184281	221137
27-16	27663	86883	55325	73767	92208	110650	129091	147533	184416	221300
27-17	27683	86910	55366	73821	92276	110731	129187	147642	184552	221463
27-18	27703	86938	55406	73875	92344	110813	129282	147750	184688	221626
27-19	27724	86965	55447	73930	92412	110894	129377	147859	184824	221789
27-20	27744	86992	55488	73984	92480	110976	129472	147968	184960	221952
27-21	27764	87019	55529	74038	92548	111058	129567	148077	185096	222115
27-22	27785	87046	55570	74093	92616	111139	129662	148186	185232	222277
27-23	27805	87074	55610	74147	92684	111221	129758	148295	185368	222440
27-24	27826	87101	55651	74202	92752	111303	129853	148404	185504	222603
27-25	27846	87128	55692	74256	92820	111384	129948	148513	185641	222766
27-26	27867	87155	55733	74311	92888	111466	130044	148622	185777	222929
27-27	27887	87183	55774	74365	92957	111548	130139	148731	185913	223092
27-28	27907	87210	55815	74420	93025	111630	130235	148840	186050	223255
27-29	27928	87237	55856	74474	93093	111712	130330	148949	186186	223418
27-30	27948	87264	55897	74529	93161	111794	130426	149058	186322	223581
27-31	27969	87292	55938	74584	93229	111875	130521	149167	186459	223744
27-32	27989	87319	55979	74638	93298	111957	130617	149276	186596	223907
27-33	28010	87346	56020	74693	93366	112039	130713	149386	186732	224070
27-34	28030	87374	56061	74748	93434	112121	130808	149495	186869	224233
27-35	28050	87401	56102	74802	93502	112203	130904	149604	187006	224396
27-36	28071	87428	56143	74857	93571	112285	131000	149714	187143	224559
27-37	28092	87456	56184	74912	93640	112368	131096	149823	187279	224722
27-38	28112	87483	56225	74966	93709	112450	131191	149933	187416	224885
27-39	28133	87511	56266	75021	93777	112532	131287	150042	187553	225048
27-40	28153	87538	56307	75076	93845	112614	131383	150151	187691	225211
27-41	28174	87565	56348	75131	93913	112696	131479	150261	187827	225374
27-42	28195	87592	56389	75186	93982	112778	131575	150371	187964	225537
27-43	28215	87620	56430	75240	94051	112861	131671	150481	188101	225700
27-44	28236	87648	56472	75295	94119	112943	131767	150591	188238	225863
27-45	28256	87676	56513	75350	94188	113025	131863	150700	188376	226026
27-46	28277	87703	56554	75404	94256	113108	131959	150810	188513	226189
27-47	28298	87731	56595	75459	94325	113190	132055	150920	188650	226352
27-48	28318	87759	56636	75513	94394	113273	132151	151030	188787	226515
27-49	28339	87786	56677	75570	94463	113355	132247	151140	188924	226678
27-50	28359	87812	56719	75625	94531	113437	132344	151250	189062	226841

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
27-51	28880	37840	56760	76680	94600	113520	132440	151360	189200	227040
27-52	28401	37868	56801	76735	94689	113603	132584	151470	189338	227205
27-53	28421	37895	56843	76790	94738	113685	132685	151580	189475	227370
27-54	28442	37922	56884	76845	94806	113768	132729	151690	189618	227535
27-55	28465	37950	56925	76900	94875	113850	132822	151800	189751	227701
27-56	28483	37979	56967	76955	94944	113933	132922	151911	189888	227866
27-57	28504	38005	57008	76010	95013	114016	133018	152021	190028	228031
27-58	28526	38033	57049	76066	95082	114098	133115	152131	190164	228197
27-59	28545	38060	57091	76121	95151	114181	133211	152242	190302	228362
27-60	28566	38088	57132	76176	95220	114264	133308	152352	190440	228528
27-61	28587	38116	57173	76231	95289	114347	133408	152462	190578	228694
27-62	28607	38143	57215	76285	95358	114430	133501	152573	190716	228859
27-63	28628	38171	57256	76339	95427	114513	133598	152683	190854	229025
27-64	28649	38198	57298	76397	95496	114595	133695	152794	190992	229191
27-65	28670	38226	57339	76452	95565	114678	133792	152904	191131	229356
27-66	28690	38254	57381	76508	95634	114761	133888	153015	191269	229522
27-67	28711	38281	57422	76563	95704	114844	133985	153126	191407	229688
27-68	28732	38309	57464	76618	95773	114927	134082	153236	191546	229855
27-69	28758	38337	57505	76674	95842	115010	134179	153347	191684	230021
27-70	28773	38364	57547	76729	95911	115093	134276	153458	191822	230186
27-71	28794	38392	57588	76784	95980	115177	134373	153569	191961	230353
27-72	28815	38420	57630	76840	96050	115260	134470	153680	192100	230520
27-73	28836	38448	57671	76895	96119	115343	134567	153791	192238	230686
27-74	28857	38476	57713	76951	96188	115426	134664	153902	192377	230852
27-75	28877	38505	57755	77006	96258	115509	134761	154012	192516	231019
27-76	28898	38533	57796	77062	96327	115592	134858	154123	192654	231186
27-77	28919	38561	57838	77117	96397	115675	134955	154233	192793	231352
27-78	28940	38589	57880	77173	96466	115759	135052	154346	192932	231519
27-79	28961	38614	57921	77228	96535	115843	135150	154457	193071	231685
27-80	28981	38642	57963	77284	96605	115926	135247	154568	193210	231852
27-81	29002	38670	58005	77340	96674	116009	135344	154679	193349	232019
27-82	29023	38698	58046	77395	96744	116093	135442	154790	193488	232186
27-83	29044	38725	58088	77451	96814	116176	135539	154902	193627	232352
27-84	29064	38753	58130	77507	96883	116260	135636	155013	193766	232520
27-85	29086	38781	58172	77562	96953	116343	135734	155124	193904	232687
27-86	29107	38809	58215	77618	97022	116427	135831	155235	194043	232854
27-87	29128	38837	58256	77674	97092	116511	135929	155347	194184	233021
27-88	29149	38865	58297	77729	97162	116594	136027	155459	194324	233188
27-89	29169	38893	58339	77785	97231	116678	136124	155570	194463	233356
27-90	29190	38920	58381	77841	97301	116761	136222	155682	194602	233522
27-91	29211	38948	58422	77897	97371	116845	136319	155794	194742	233689
27-92	29232	38976	58464	77953	97441	116929	136417	155905	194882	233855
27-93	29253	39004	58506	78008	97511	117013	136515	156017	195021	234022
27-94	29274	39032	58548	78064	97580	117097	136613	156129	195161	234189
27-95	29295	39060	58590	78120	97650	117180	136710	156240	195301	234356
27-96	29316	39088	58632	78176	97720	117264	136808	156352	195440	234522
27-97	29337	39116	58674	78232	97790	117348	136906	156464	195580	234688
27-98	29358	39144	58716	78288	97860	117432	137004	156576	195720	234855
27-99	29379	39172	58758	78344	97930	117516	137102	156688	195860	235021
28-00	29400	39200	58800	78400	98000	117600	137200	156800	196000	235200

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet	1 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
28-01	29421	39228	58842	78456	98070	117684	137298	156912	196140	235368
28-02	29442	39256	58884	78512	98140	117768	137396	157024	196280	235596
28-03	29463	39284	58926	78568	98210	117852	137494	157186	196420	235704
28-04	29484	39312	58968	78624	98280	117936	137592	157248	196560	235872
28-05	29505	39340	59012	78680	98350	118020	137690	157360	196700	236041
28-06	29526	39368	59052	78736	98420	118105	137789	157472	196841	236209
28-07	29547	39396	59094	78792	98491	118189	137887	157585	196981	236377
28-08	29568	39424	59136	78848	98561	118273	137985	157697	197122	236546
28-09	29589	39452	59179	78905	98631	118357	138083	157810	197262	236714
28-10	29610	39480	59221	78961	98701	118441	138182	157922	197402	236883
28-11	29631	39509	59263	79017	98772	118526	138280	158034	197543	237052
28-12	29653	39537	59305	79073	98842	118610	138379	158147	197684	237220
28-13	29674	39565	59347	79130	98912	118695	138477	158259	197824	237389
28-14	29695	39593	59389	79186	98982	118779	138576	158372	197965	237558
28-15	29716	39621	59432	79242	99053	118863	138674	158484	198106	237727
28-16	29737	39649	59474	79299	99123	118948	138772	158597	198246	237896
28-17	29758	39677	59516	79355	99194	119032	138871	158710	198387	238065
28-18	29779	39706	59558	79411	99264	119117	138970	158822	198528	238234
28-19	29800	39734	59601	79468	99334	119201	139068	158935	198669	238403
28-20	29821	39762	59643	79524	99405	119286	139167	159048	198810	238572
28-21	29843	39790	59685	79580	99475	119371	139266	159161	198951	238741
28-22	29864	39818	59728	79637	99546	119455	139364	159274	199092	238911
28-23	29885	39847	59770	79693	99617	119540	139463	159387	199233	239080
28-24	29906	39875	59812	79750	99687	119625	139562	159500	199374	239249
28-25	29927	39903	59855	79806	99758	119709	139661	159612	199516	239419
28-26	29949	39931	59897	79863	99828	119794	139760	159726	199657	239588
28-27	29970	39960	59939	79919	99899	119879	139859	159839	199798	239758
28-28	29991	39988	59982	79976	99970	119964	139958	159952	199940	239928
28-29	30013	40016	60024	80032	100046	120041	140057	160065	200081	240081
28-30	30033	40044	60067	80089	100111	120133	140156	160178	200222	240267
28-31	30055	40073	60109	80146	100182	120218	140255	160291	200364	240437
28-32	30076	40101	60152	80202	100253	120303	140354	160404	200506	240607
28-33	30097	40129	60194	80258	100324	120388	140454	160520	200647	240777
28-34	30118	40158	60237	80315	100394	120473	140553	160631	200789	240947
28-35	30140	40186	60279	80372	100465	120558	140651	160744	200931	241117
28-36	30161	40214	60322	80429	100536	120643	140751	160858	201072	241287
28-37	30182	40243	60364	80486	100607	120729	140850	160971	201214	241457
28-38	30203	40271	60407	80542	100678	120814	140949	161085	201356	241627
28-39	30225	40300	60449	80599	100749	120899	141049	161198	201498	241798
28-40	30246	40328	60492	80656	100820	120984	141148	161312	201640	241968
28-41	30267	40356	60535	80713	100891	121069	141247	161426	201782	242138
28-42	30289	40385	60577	80770	100962	121154	141347	161539	201924	242309
28-43	30310	40413	60620	80826	101033	121240	141446	161653	202066	242479
28-44	30331	40442	60663	80883	101104	121325	141546	161767	202208	242650
28-45	30353	40471	60705	80940	101175	121410	141645	161880	202351	242821
28-46	30374	40499	60748	80997	101246	121496	141745	161994	202494	242991
28-47	30395	40527	60791	81054	101318	121581	141845	162108	202635	243162
28-48	30417	40556	60833	81111	101389	121667	141944	162222	202778	243333
28-49	30438	40584	60876	81168	101460	121752	142044	162336	202920	243504
28-50	30459	40613	60919	81225	101531	121837	142144	162450	203062	243675

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	4 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
28-51	30481	40641	60961	81282	101602	121923	142243	162564	203205	243846
28-52	30502	40670	61004	81339	101674	122009	142343	162678	203318	244017
28-53	30524	40698	61047	81396	101745	122094	142413	162792	203493	244188
28-54	30545	40727	61091	81458	101816	122180	142548	162906	203633	244359
28-55	30566	40755	61138	81510	101888	122264	142643	163020	203778	244529
28-56	30588	40784	61176	81567	101969	122351	142743	163135	203918	244703
28-57	30609	40812	61218	81624	102031	122437	142813	163249	204061	244873
28-58	30631	40841	61261	81682	102102	122522	142943	163363	204204	245045
28-59	30652	40869	61304	81739	102173	122608	143043	163478	204347	245216
28-60	30673	40898	61347	81796	102245	122694	143113	163592	204490	245388
28-61	30695	40927	61390	81853	102316	122780	143243	163706	204633	245560
28-62	30716	40955	61433	81910	102388	122866	143343	163821	204776	245731
28-63	30738	40984	61476	81968	102460	122952	143443	163935	204919	245903
28-64	30759	41012	61519	82025	102531	123037	143544	164050	205062	246075
28-65	30781	41041	61562	82083	102603	123123	143644	164164	205206	246247
28-66	30802	41070	61605	82140	102674	123209	143744	164279	205349	246419
28-67	30824	41098	61648	82197	102746	123295	143844	164394	205492	246591
28-68	30846	41127	61691	82254	102818	123381	143945	164508	205636	246763
28-69	30867	41156	61734	82312	102889	123467	144045	164623	205779	246935
28-70	30888	41184	61777	82369	102961	123553	144116	164738	205923	247107
28-71	30910	41213	61820	82426	103033	123640	144246	164853	206066	247279
28-72	30931	41242	61863	82484	103105	123726	144347	164968	206210	247453
28-73	30953	41271	61906	82541	103177	123812	144447	165083	206353	247624
28-74	30975	41299	61949	82599	103248	123898	144548	165198	206497	247796
28-75	30996	41328	61992	82656	103320	123984	144648	165312	206641	247969
28-76	31018	41357	62035	82714	103392	124071	144749	165437	206784	248141
28-77	31039	41386	62078	82771	103464	124157	144850	165553	206927	248314
28-78	31061	41414	62122	82829	103536	124243	144950	165669	207072	248487
28-79	31082	41443	62165	82886	103608	124330	145051	165779	207216	248659
28-80	31104	41472	62208	82944	103680	124416	145152	165893	207360	248833
28-81	31126	41501	62251	83002	103752	124502	145253	166003	207504	249005
28-82	31147	41530	62294	83059	103824	124589	145354	166118	207648	249178
28-83	31169	41558	62338	83117	103897	124675	145455	166234	207793	249351
28-84	31190	41587	62381	83175	103968	124762	145556	166349	207938	249524
28-85	31212	41616	62424	83233	104040	124848	145656	166464	208081	249697
28-86	31234	41645	62467	83290	104112	124935	145757	166580	208225	249870
28-87	31256	41674	62511	83348	104185	125022	145858	166695	208369	250043
28-88	31277	41703	62554	83405	104257	125108	145950	166811	208514	250216
28-89	31298	41732	62597	83463	104329	125195	146051	166926	208658	250389
28-90	31320	41760	62641	83521	104401	125281	146152	167042	208802	250563
28-91	31342	41789	62684	83579	104473	125368	146263	167158	208947	250736
28-92	31364	41818	62727	83637	104546	125455	146364	167273	209092	250910
28-93	31385	41847	62771	83694	104618	125542	146465	167389	209236	251083
28-94	31407	41876	62814	83752	104690	125629	146567	167505	209381	251257
28-95	31429	41905	62858	83810	104763	125715	146668	167620	209526	251431
28-96	31451	41934	62901	83868	104835	125802	146769	167736	209670	251604
28-97	31472	41963	62945	83926	104908	125889	146871	167852	209815	251778
28-98	31494	41992	62988	83984	104980	125976	146972	167968	209960	251952
28-99	31516	42021	63031	84042	105052	126063	147073	168084	210105	252126
28-900	31537	42050	63075	84100	105125	126150	147175	168200	210250	252300

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
29'01	31559	42079	63118	84158	105197	126237	147276	168316	210395	252474
29'02	31581	42108	63162	84216	105270	126324	147378	168382	210540	252648
29'03	31603	42137	63206	84274	105343	126411	147480	168548	210685	252822
29'04	31625	42166	63249	84332	105415	126498	147581	168664	210830	252996
29'05	31646	42195	63293	84390	105488	126585	147683	168780	210976	253171
29'06	31668	42224	63336	84448	105560	126673	147784	168897	211121	253345
29'07	31690	42253	63380	84506	105633	126760	147886	169013	211266	253519
29'08	31712	42282	63423	84565	105706	126847	147988	169129	211412	253694
29'09	31734	42311	63467	84623	105778	126934	148090	169246	211557	253868
29'10	31756	42340	63511	84681	105861	127021	148192	169362	211703	254043
29'11	31777	42370	63554	84739	105924	127109	148294	169478	211848	254318
29'12	31799	42399	63598	84797	105997	127196	148396	169595	211994	254592
29'13	31821	42428	63642	84856	106070	127284	148497	169711	212139	254867
29'14	31843	42457	63685	84914	106142	127371	148599	169828	212285	255142
29'15	31865	42486	63729	84972	106215	127458	148701	169944	212431	255417
29'16	31886	42515	63773	85031	106288	127546	148803	170061	212576	255692
29'17	31908	42544	63817	85089	106361	127633	148905	170178	212722	255967
29'18	31930	42573	63860	85147	106434	127721	149008	170294	212868	256242
29'19	31952	42603	63904	85206	106507	127808	149110	170411	213014	256517
29'20	31974	42632	63948	85264	106580	127896	149212	170528	213160	256792
29'21	31996	42661	63992	85322	106653	127984	149314	170645	213306	257067
29'22	32018	42690	64036	85381	106726	128072	149416	170762	213452	257342
29'23	32040	42720	64079	85439	106799	128160	149519	170879	213598	257617
29'24	32062	42749	64123	85498	106872	128247	149621	170996	213744	257892
29'25	32084	42778	64167	85556	106945	128334	149723	171112	213891	258167
29'26	32106	42807	64211	85615	107018	128422	149826	171230	214037	258442
29'27	32127	42837	64255	85673	107092	128510	149927	171348	214183	258717
29'28	32149	42866	64299	85732	107165	128598	150031	171464	214330	258992
29'29	32171	42895	64343	85790	107237	128686	150135	171581	214476	259267
29'30	32193	42924	64387	85849	107311	128773	150236	171698	214623	259542
29'31	32215	42954	64431	85907	107383	128861	150337	171812	214769	259817
29'32	32237	42983	64475	85966	107458	128949	150441	171932	214916	260092
29'33	32259	43012	64519	86025	107531	129037	150544	172050	215063	260367
29'34	32281	43042	64563	86084	107604	129125	150646	172167	215209	260642
29'35	32303	43071	64607	86142	107678	129213	150749	172284	215356	260917
29'36	32325	43100	64651	86201	107751	129301	150852	172402	215502	261192
29'37	32347	43130	64695	86260	107825	129390	150954	172519	215648	261467
29'38	32369	43159	64739	86318	107898	129478	151057	172637	215795	261742
29'39	32391	43189	64783	86377	107971	129566	151160	172754	215941	262017
29'40	32413	43218	64827	86436	108045	129654	151263	172872	216088	262292
29'41	32435	43247	64871	86495	108118	129742	151366	172990	216234	262567
29'42	32458	43277	64915	86554	108192	129830	151469	173107	216381	262842
29'43	32480	43306	64959	86612	108267	129919	151572	173225	216528	263117
29'44	32502	43336	65004	86671	108339	130007	151675	173343	216675	263392
29'45	32524	43365	65048	86730	108413	130096	151778	173460	216822	263667
29'46	32546	43395	65091	86789	108486	130184	151880	173578	216969	263942
29'47	32568	43424	65135	86848	108560	130273	151983	173695	217116	264217
29'48	32590	43454	65180	86907	108634	130361	152086	173813	217263	264492
29'49	32612	43483	65224	86966	108707	130449	152190	173930	217410	264767
29'50	32634	43513	65268	87024	108781	130537	152293	174048	217557	265042

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
29'51	32656	48542	65318	87084	108855	130626	152397	174168	217710	261352
29'52	32677	48572	65357	87143	108929	130715	152500	174286	217858	261429
29'53	32700	48601	65401	87202	109003	130803	152603	174404	218003	261606
29'54	32723	48631	65445	87261	109076	130892	152706	174522	218153	261783
29'55	32745	48660	65490	87320	109150	130980	152810	174640	218301	261967
29'56	32767	48690	65534	87379	109224	131069	152913	174759	218448	262153
29'57	32789	48719	65578	87438	109298	131158	153017	174877	218596	262335
29'58	32811	48749	65623	87498	109372	131246	153120	174995	218744	262518
29'59	32833	48778	65667	87557	109446	131335	153224	175114	218892	262700
29'60	32856	48808	65712	87616	109520	131424	153328	175232	219040	262884
29'61	32878	48838	65756	87675	109594	131513	153431	175350	219188	263068
29'62	32900	48867	65800	87734	109668	131602	153535	175469	219336	263250
29'63	32922	48897	65845	87794	109742	131691	153638	175587	219484	263431
29'64	32944	48926	65889	87853	109816	131779	153742	175706	219632	263615
29'65	32967	48956	65934	87912	109890	131868	153846	175824	219781	263797
29'66	32989	48986	65978	87972	109964	131957	153950	175943	219929	263981
29'67	33011	49015	66023	88031	110039	132046	154053	176062	220077	264163
29'68	33033	49045	66067	88090	110113	132135	154157	176180	220226	264347
29'69	33056	49075	66112	88150	110187	132224	154261	176299	220374	264530
29'70	33078	49104	66156	88209	110266	132313	154365	176418	220522	264712
29'71	33100	49134	66201	88269	110335	132403	154469	176537	220671	264895
29'72	33122	49164	66245	88328	110410	132492	154573	176656	220820	265078
29'73	33146	49194	66290	88387	110484	132580	154677	176775	220968	265261
29'74	33167	49223	66335	88447	110558	132670	154781	176894	221117	265444
29'75	33189	49253	66379	88506	110633	132759	154885	177012	221266	265628
29'76	33212	49283	66424	88566	110707	132848	154990	177131	221414	265811
29'77	33234	49313	66468	88625	110782	132937	155094	177251	221563	266000
29'78	33256	49342	66513	88685	110856	133027	155198	177370	221712	266184
29'79	33279	49372	66558	88744	110930	133116	155302	177489	221861	266368
29'80	33301	49402	66603	88804	111005	133206	155407	177608	222010	266552
29'81	33323	49432	66647	88864	111079	133295	155511	177727	222159	266736
29'82	33346	49462	66692	88923	111154	133384	155615	177846	222308	266920
29'83	33368	49491	66737	88983	111229	133474	155719	177966	222457	267104
29'84	33391	49521	66782	89044	111303	133565	155823	178087	222606	267288
29'85	33413	49551	66826	89102	111378	133656	155928	178204	222756	267473
29'86	33435	49581	66871	89161	111452	133747	156033	178325	222906	267658
29'87	33458	49611	66916	89220	111527	133838	156137	178445	223056	267843
29'88	33480	49641	66961	89281	111602	133929	156242	178566	223206	268028
29'89	33503	49671	67006	89341	111676	134021	156347	178687	223356	268212
29'90	33525	49700	67050	89401	111751	134101	156451	178808	223506	268397
29'91	33547	49730	67095	89461	111826	134191	156556	178929	223656	268582
29'92	33570	49760	67140	89521	111901	134280	156661	179041	223806	268767
29'93	33592	49790	67185	89580	111976	134370	156765	179161	223956	268952
29'94	33614	49820	67230	89640	112050	134460	156870	179282	224106	269137
29'95	33637	49850	67275	89700	112125	134550	156975	179400	224256	269322
29'96	33660	49880	67320	89760	112200	134640	157080	179520	224406	269507
29'97	33682	49910	67365	89820	112275	134730	157185	179640	224556	269692
29'98	33705	49940	67410	89880	112350	134820	157290	179760	224706	269877
29'99	33727	49970	67455	89940	112425	134910	157395	179880	224856	270062
30'00	33750	50000	67500	90000	112500	135000	157500	180000	225000	270247

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
30'01	88772	48080	67545	80060	112575	185090	157605	180120	235150	270180
30'02	88795	48060	67590	80120	112650	185180	157710	180240	235300	270360
30'03	88817	48090	67635	80180	112725	185270	157815	180360	235450	270540
30'04	88840	48120	67680	80240	112800	185360	157920	180480	235600	270720
30'05	88862	48150	67725	80300	112875	185450	158025	180600	235750	270900
30'06	88885	48180	67770	80360	112950	185540	158130	180720	235900	271081
30'07	88907	48210	67815	80420	113025	185631	158235	180841	236051	271261
30'08	88930	48240	67860	80481	113101	185721	158341	180961	236202	271442
30'09	88953	48270	67906	80541	113176	185811	158446	181082	236352	271622
30'10	88975	48300	67950	80601	113261	185902	158552	181202	236502	271803
30'11	88998	48331	67996	80661	113337	185992	158657	181322	236653	271984
30'12	89021	48361	68041	80721	113402	186082	158763	181443	236804	272164
30'13	89043	48391	68086	80782	113477	186173	158868	181563	236954	272345
30'14	89066	48421	68131	80842	113552	186263	158973	181684	237105	272526
30'15	89088	48451	68177	80902	113628	186353	159079	181804	237256	272707
30'16	89111	48481	68222	80963	113703	186444	159184	181925	237406	272888
30'17	89134	48511	68267	81023	113779	186534	159290	182046	237557	273069
30'18	89156	48542	68312	81083	113854	186625	159396	182166	237708	273250
30'19	89179	48572	68358	81144	113930	186715	159501	182287	237859	273431
30'20	89201	48602	68403	81204	114005	186806	159607	182408	238010	273612
30'21	89224	48632	68448	81264	114080	186897	159713	182529	238161	273793
30'22	89247	48662	68494	81325	114156	186987	159818	182650	238312	273974
30'23	89269	48693	68539	81385	114232	187078	159924	182771	238463	274156
30'24	89292	48723	68585	81446	114307	187169	160030	182892	238614	274337
30'25	89315	48753	68630	81506	114383	187259	160136	183012	238765	274518
30'26	89338	48783	68675	81567	114458	187350	160243	183134	238917	274700
30'27	89360	48814	68720	81627	114534	187441	160348	183255	239068	274882
30'28	89383	48844	68766	81688	114610	187532	160454	183376	239220	275064
30'29	89406	48874	68811	81748	114686	187623	160560	183497	239371	275245
30'30	89428	48905	68857	81809	114761	187713	160666	183618	239523	275427
30'31	89451	48935	68902	81870	114837	187804	160772	183739	239674	275609
30'32	89474	48966	68948	81930	114912	187895	160878	183860	239826	275791
30'33	89497	48996	68993	81991	114989	187986	160984	183982	239977	275973
30'34	89519	49026	69039	82051	115064	188077	161090	184103	240129	276155
30'35	89542	49056	69084	82112	115140	188168	161196	184224	240281	276337
30'36	89565	49086	69130	82173	115216	188259	161303	184346	240433	276519
30'37	89588	49117	69175	82234	115292	188351	161409	184467	240584	276701
30'38	89610	49147	69221	82294	115368	188442	161515	184589	240736	276883
30'39	89633	49178	69266	82355	115444	188533	161622	184710	240888	277065
30'40	89656	49208	69312	82416	115520	188624	161728	184832	241040	277248
30'41	89679	49238	69358	82477	115596	188715	161834	184954	241192	277430
30'42	89702	49269	69403	82538	115672	188806	161941	185076	241344	277613
30'43	89724	49299	69449	82598	115748	188898	162047	185197	241496	277795
30'44	89747	49330	69495	82659	115824	188989	162154	185319	241648	277978
30'45	89770	49360	69540	82720	115900	189080	162260	185440	241800	278161
30'46	89793	49391	69586	82781	115976	189171	162367	185562	241952	278343
30'47	89815	49421	69632	82842	116051	189262	162473	185683	242104	278526
30'48	89838	49452	69677	82903	116129	189353	162579	185806	242256	278709
30'49	89861	49482	69723	82964	116205	189444	162687	185928	242408	278892
30'50	89884	49513	69769	83025	116281	189537	162793	186050	242560	279075

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
30:51	34907	46548	69814	98086	116357	139629	162900	186172	232616	279258
30:52	34930	46574	69860	98147	116484	139721	163007	186294	232668	279441
30:53	34958	46604	69906	98208	116510	139812	163114	186416	233020	279624
30:54	34976	46635	69952	98269	116586	139904	163221	186538	233173	279807
30:55	34999	46665	69998	98330	116663	139995	163328	186660	233331	279991
30:56	35022	46696	70044	98391	116739	140087	163435	186783	233478	280174
30:57	35045	46726	70089	98452	116816	140179	163542	186905	233631	280357
30:58	35068	46757	70135	98514	116892	140270	163649	187027	233784	280541
30:59	35091	46787	70181	98575	116968	140362	163756	187150	233937	280724
30:60	35118	46818	70227	98636	117048	140454	163863	187272	234090	280908
30:61	35136	46849	70273	98697	117122	140545	163965	187394	234243	281092
30:62	35159	46879	70319	98758	117198	140638	164077	187517	234396	281275
30:63	35182	46910	70365	98820	117275	140730	164175	187639	234549	281449
30:64	35205	46940	70411	98881	117351	140821	164292	187762	234702	281633
30:65	35229	46972	70458	98942	117428	140914	164401	187884	234851	281827
30:66	35251	47003	70503	99004	117504	141005	164506	188007	235008	282011
30:67	35274	47032	70539	99065	117581	141097	164614	188130	235162	282195
30:68	35297	47063	70595	99126	117658	141189	164721	188253	235316	282379
30:69	35320	47093	70639	99188	117734	141280	164827	188375	235469	282563
30:70	35343	47124	70687	99249	117811	141373	164936	188498	235622	282747
30:71	35366	47155	70733	99310	117887	141466	165043	188621	235774	282931
30:72	35389	47186	70779	99372	117965	141558	165151	188744	235926	283116
30:73	35412	47217	70825	99433	118042	141650	165258	188867	236078	283300
30:74	35436	47247	70871	99495	118118	141742	165366	188990	236237	283484
30:75	35459	47278	70917	99556	118195	141834	165473	189112	236391	283669
30:76	35482	47309	70963	99618	118272	141927	165581	189236	236544	283853
30:77	35505	47340	71009	99679	118349	142019	165689	189359	236698	284038
30:78	35528	47370	71056	99741	118426	142111	165796	189483	236852	284223
30:79	35551	47401	71102	99802	118503	142204	165904	189606	237006	284407
30:80	35574	47432	71148	99864	118580	142296	166012	189728	237160	284592
30:81	35597	47463	71194	99926	118657	142388	166120	189851	237314	284777
30:82	35620	47494	71240	99987	118734	142481	166228	189974	237468	284962
30:83	35643	47524	71287	100049	118811	142573	166336	190098	237622	285147
30:84	35666	47555	71333	100111	118888	142666	166443	190221	237776	285332
30:85	35689	47586	71379	100172	118965	142758	166552	190344	237931	285517
30:86	35712	47617	71425	100234	119042	142851	166659	190468	238085	285702
30:87	35736	47648	71472	100296	119120	142944	166767	190591	238239	285887
30:88	35759	47679	71518	100357	119197	143036	166876	190715	238394	286072
30:89	35782	47710	71564	100419	119274	143129	166984	190838	238548	286258
30:90	35805	47740	71611	100481	119351	143221	167092	190962	238702	286443
30:91	35829	47771	71657	100543	119428	143314	167200	191085	238857	286628
30:92	35852	47802	71703	100605	119506	143407	167308	191209	239013	286814
30:93	35876	47833	71750	100666	119583	143500	167416	191334	239168	286999
30:94	35899	47864	71796	100728	119660	143593	167525	191457	239324	287185
30:95	35921	47895	71843	100790	119738	143685	167633	191580	239479	287371
30:96	35945	47926	71889	100852	119815	143778	167741	191704	239635	287556
30:97	35968	47957	71936	100914	119893	143871	167850	191828	239790	287742
30:98	35991	47988	71983	100976	119970	143964	167958	191952	239946	287928
30:99	36014	48019	72029	101038	120047	144057	168067	192076	240102	288114
31:00	36037	48050	72075	101100	120125	144150	168175	192200	240258	288300

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Height in Feet	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
31'01	86061	48081	72121	96162	120202	144243	168284	192324	240405	288486
31'02	86084	48112	72167	96223	120279	144335	168390	192446	240558	288669
31'03	86107	48143	72215	96286	120368	144399	168501	192572	240715	288838
31'04	86129	48178	72269	96345	120431	144518	168604	192690	240868	289035
31'05	86154	48205	72308	96410	120513	144615	168718	192820	241026	289221
31'06	86177	48236	72354	96479	120590	144709	168837	192945	241181	289417
31'07	86200	48267	72401	96534	120668	144802	168955	193069	241336	289603
31'08	86224	48298	72447	96597	120746	144895	169044	193193	241492	289790
31'09	86247	48329	72494	96659	120823	144988	169158	193318	241647	289976
31'10	86270	48360	72541	96721	120901	145081	169262	193442	241802	290163
31'11	86294	48392	72587	96789	120979	145176	169371	193566	241958	290350
31'12	86317	48423	72634	96845	121057	145268	169480	193691	242114	290536
31'13	86340	48454	72681	96908	121135	145362	169588	193815	242269	290723
31'14	86364	48485	72727	96970	121212	145455	169697	193940	242425	290910
31'15	86387	48516	72774	97033	121290	145548	169806	194064	242581	291097
31'16	86410	48547	72821	97095	121368	145642	169914	194189	242736	291284
31'17	86434	48578	72868	97157	121446	145735	170026	194314	242892	291471
31'18	86457	48609	72914	97219	121524	145829	170134	194438	243048	291658
31'19	86481	48641	72961	97282	121602	145922	170243	194563	243204	291845
31'20	86504	48672	73008	97344	121680	146016	170353	194688	243360	292032
31'21	86527	48703	73055	97406	121758	146110	170461	194813	243516	292219
31'22	86551	48734	73102	97469	121836	146203	170570	194938	243672	292407
31'23	86574	48766	73148	97531	121914	146297	170680	195063	243828	292594
31'24	86598	48797	73195	97594	121992	146391	170789	195188	243984	292781
31'25	86621	48828	73242	97656	122070	146484	170898	195312	244141	292969
31'26	86645	48859	73289	97719	122148	146578	171008	195438	244297	293156
31'27	86668	48891	73336	97781	122227	146672	171117	195563	244453	293344
31'28	86691	48922	73383	97844	122306	146766	171227	195688	244610	293532
31'29	86715	48953	73430	97906	122385	146860	171336	195813	244766	293719
31'30	86738	48984	73477	97969	122461	146953	171446	195938	244922	293907
31'31	86762	49016	73524	98032	122539	147047	171555	196063	245079	294095
31'32	86785	49047	73571	98094	122618	147141	171665	196188	245236	294282
31'33	86809	49078	73618	98157	122696	147235	171775	196314	245392	294471
31'34	86832	49110	73665	98220	122774	147329	171884	196439	245549	294659
31'35	86856	49141	73712	98283	122853	147423	171994	196564	245706	294847
31'36	86879	49172	73759	98345	122931	147517	172104	196689	245862	295036
31'37	86903	49204	73806	98408	123010	147612	172213	196815	246020	295223
31'38	86926	49235	73853	98470	123088	147706	172323	196941	246176	295411
31'39	86950	49267	73900	98533	123166	147800	172433	197066	246333	295600
31'40	86973	49298	73947	98596	123245	147894	172543	197192	246490	295788
31'41	86997	49329	73994	98659	123323	147988	172653	197318	246647	295976
31'42	87021	49361	74041	98722	123402	148082	172763	197444	246804	296165
31'43	87044	49393	74088	98784	123481	148177	172873	197569	246961	296353
31'44	87068	49424	74136	98847	123560	148271	172983	197695	247118	296542
31'45	87091	49455	74183	98910	123638	148365	173093	197820	247276	296731
31'46	87115	49487	74230	98973	123716	148460	173203	197946	247433	296919
31'47	87139	49518	74277	99036	123795	148554	173313	198072	247590	297108
31'48	87162	49550	74324	99099	123874	148649	173423	198198	247748	297297
31'49	87186	49581	74371	99162	123953	148743	173534	198324	247906	297486
31'50	87209	49612	74418	99225	124031	148837	173644	198450	248063	297675

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Height in Feet	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
31.51	37338	49644	74466	99288	124110	148932	173754	198576	243220	297864
31.52	37357	49675	74513	99351	124189	149037	173864	198702	243378	298053
31.53	37380	49707	74561	99414	124268	149121	173975	198828	243535	298243
31.54	37404	49739	74608	99477	124346	149216	174085	198954	243699	298431
31.55	37428	49770	74655	99540	124425	149310	174195	199080	243851	298621
31.56	37451	49802	74703	99603	124504	149408	174308	199207	244008	298810
31.57	37475	49833	74750	99666	124583	149500	174416	199333	244166	298999
31.58	37499	49865	74797	99730	124662	149594	174527	199459	244324	299189
31.59	37522	49896	74845	99793	124741	149689	174637	199586	244482	299378
31.60	37546	49928	74892	99856	124820	149784	174748	199712	244640	299568
31.61	37470	49960	74939	99919	124899	149879	174859	199838	244799	299757
31.62	37493	49991	74987	99982	124978	149974	174969	199965	244956	299947
31.63	37517	50023	75034	100046	125057	150069	175080	200091	245114	300137
31.64	37541	50054	75082	100109	125136	150163	175191	200218	245272	300327
31.65	37565	50086	75129	100172	125215	150258	175301	200344	245431	300517
31.66	37588	50118	75177	100235	125294	150353	175412	200471	245589	300707
31.67	37612	50149	75224	100299	125373	150448	175523	200598	245747	300897
31.68	37636	50181	75272	100362	125453	150543	175634	200724	245906	301087
31.69	37660	50213	75319	100426	125532	150638	175745	200851	246064	301277
31.70	37683	50244	75367	100489	125611	150733	175856	200978	246223	301467
31.71	37708	50276	75411	100552	125675	150829	175964	201105	246381	301657
31.72	37731	50308	75463	100616	125770	150924	176078	201231	246540	301846
31.73	37755	50340	75509	100679	125849	151019	176189	201359	246698	302036
31.74	37779	50371	75557	100743	125928	151114	176300	201486	246857	302226
31.75	37802	50403	75605	100808	126008	151209	176411	201613	247016	302416
31.76	37826	50435	75652	100870	126087	151305	176523	201740	247174	302606
31.77	37850	50467	75700	100933	126167	151400	176633	201867	247333	302796
31.78	37874	50498	75748	100997	126246	151495	176744	201994	247492	302986
31.79	37898	50530	75795	101060	126325	151591	176856	202121	247651	303176
31.80	37921	50562	75843	101124	126405	151686	176967	202248	247810	303366
31.81	37945	50594	75891	101188	126484	151781	177078	202375	247969	303556
31.82	37969	50626	75938	101251	126564	151877	177190	202502	248128	303746
31.83	37993	50657	75986	101315	126644	151972	177301	202629	248287	303936
31.84	38017	50689	76034	101379	126723	152068	177412	202757	248446	304126
31.85	38041	50721	76082	101442	126803	152163	177523	202884	248604	304317
31.86	38065	50753	76129	101506	126882	152259	177634	203012	248763	304507
31.87	38089	50785	76177	101570	126962	152355	177745	203139	248922	304697
31.88	38113	50817	76225	101633	127042	152450	177856	203267	249081	304887
31.89	38136	50849	76273	101677	127121	152546	177967	203394	249240	305078
31.90	38160	50880	76321	101761	127201	152641	178078	203522	249399	305268
31.91	38184	50912	76369	101825	127281	152737	178189	203650	249558	305458
31.92	38208	50944	76416	101889	127361	152833	178300	203777	249717	305648
31.93	38232	50976	76464	101953	127441	152929	178411	203905	249876	305838
31.94	38256	51008	76512	102016	127520	153025	178523	204033	250035	306028
31.95	38280	51040	76560	102080	127600	153120	178634	204160	250194	306218
31.96	38304	51072	76608	102144	127680	153216	178745	204288	250353	306408
31.97	38328	51104	76656	102208	127760	153312	178856	204416	250512	306598
31.98	38352	51136	76704	102272	127840	153408	178967	204544	250671	306788
31.99	38376	51168	76752	102336	127920	153504	179078	204672	250830	306978
32.00	38400	51200	76800	102400	128000	153600	179189	204800	250989	307168

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
32'01	88424	51332	76848	102464	128080	158696	179312	204928	254160	307892
32'02	88448	51364	76896	102528	128160	158792	179424	205088	254320	307984
32'03	88472	51396	76944	102592	128240	158888	179536	205184	254432	308076
32'04	88496	51428	76992	102656	128320	158984	179648	205280	254544	308168
32'05	88520	51460	77040	102720	128400	159080	179760	205376	254656	308260
32'06	88544	51492	77088	102784	128480	159176	179872	205472	254768	308352
32'07	88568	51524	77136	102848	128560	159272	179984	205568	254880	308444
32'08	88592	51556	77184	102912	128640	159368	180096	205664	254992	308536
32'09	88616	51588	77232	102976	128720	159464	180208	205760	255104	308628
32'10	88640	51620	77280	103040	128800	159560	180320	205856	255216	308720
32'11	88664	51652	77328	103104	128880	159656	180432	205952	255328	308812
32'12	88688	51684	77376	103168	128960	159752	180544	206048	255440	308904
32'13	88712	51716	77424	103232	129040	159848	180656	206144	255552	309000
32'14	88736	51748	77472	103296	129120	159944	180768	206240	255664	309096
32'15	88760	51780	77520	103360	129200	160040	180880	206336	255776	309188
32'16	88784	51812	77568	103424	129280	160136	180992	206432	255888	309280
32'17	88808	51844	77616	103488	129360	160232	181104	206528	255992	309376
32'18	88832	51876	77664	103552	129440	160328	181216	206624	256104	309468
32'19	88856	51908	77712	103616	129520	160424	181328	206720	256216	309560
32'20	88880	51940	77760	103680	129600	160520	181440	206816	256328	309652
32'21	88904	51972	77808	103744	129680	160616	181552	206912	256440	309744
32'22	88928	52004	77856	103808	129760	160712	181664	207008	256552	309836
32'23	88952	52036	77904	103872	129840	160808	181776	207104	256664	309928
32'24	88976	52068	77952	103936	129920	160904	181888	207200	256776	310020
32'25	89000	52100	78000	104000	130000	161000	182000	207296	256888	310112
32'26	89024	52132	78048	104064	130080	161096	182112	207392	256992	310204
32'27	89048	52164	78096	104128	130160	161192	182224	207488	257104	310296
32'28	89072	52196	78144	104192	130240	161288	182336	207584	257216	310388
32'29	89096	52228	78192	104256	130320	161384	182448	207680	257328	310480
32'30	89120	52260	78240	104320	130400	161480	182560	207776	257440	310572
32'31	89144	52292	78288	104384	130480	161576	182672	207872	257552	310664
32'32	89168	52324	78336	104448	130560	161672	182784	207968	257664	310756
32'33	89192	52356	78384	104512	130640	161768	182896	208064	257776	310848
32'34	89216	52388	78432	104576	130720	161864	183008	208160	257888	310940
32'35	89240	52420	78480	104640	130800	161960	183120	208256	257992	311032
32'36	89264	52452	78528	104704	130880	162056	183232	208352	258104	311124
32'37	89288	52484	78576	104768	130960	162152	183344	208448	258216	311216
32'38	89312	52516	78624	104832	131040	162248	183456	208544	258328	311308
32'39	89336	52548	78672	104896	131120	162344	183568	208640	258440	311400
32'40	89360	52580	78720	104960	131200	162440	183680	208736	258552	311492
32'41	89384	52612	78768	105024	131280	162536	183792	208832	258664	311584
32'42	89408	52644	78816	105088	131360	162632	183904	208928	258776	311676
32'43	89432	52676	78864	105152	131440	162728	184016	209024	258888	311768
32'44	89456	52708	78912	105216	131520	162824	184128	209120	258992	311860
32'45	89480	52740	78960	105280	131600	162920	184240	209216	259104	311952
32'46	89504	52772	79008	105344	131680	163016	184352	209312	259216	312044
32'47	89528	52804	79056	105408	131760	163112	184464	209408	259328	312136
32'48	89552	52836	79104	105472	131840	163208	184576	209504	259440	312228
32'49	89576	52868	79152	105536	131920	163304	184688	209600	259552	312320
32'50	89600	52900	79200	105600	132000	163400	184800	209696	259664	312412

TABLE II.—Of Earthwork in Cutting or Embankment for various Slopes for 100 feet length in Cubic Feet, Surface of Ground Level.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
32-51	59634	52845	79267	105690	132112	158535	184958	211380	264325	317070
32-52	59658	52878	79316	105755	132194	158633	185071	211510	264338	317265
32-53	59683	52910	79365	105820	132275	158780	185185	211640	264550	317460
32-54	59707	52943	79414	105885	132356	158838	185299	211770	264713	317655
32-55	59781	52975	79463	105950	132438	158925	185413	211900	264876	317851
32-56	59756	53008	79512	106015	132519	159033	185527	212031	265038	318046
32-57	59780	53040	79560	106080	132601	159121	185641	212161	265201	318241
32-58	59806	53073	79609	106146	132682	159218	185755	212291	265364	318437
32-59	59829	53105	79658	106211	132763	159316	185869	212422	265527	318633
32-60	59853	53138	79707	106276	132845	159414	185983	212552	265690	318828
32-61	59878	53171	79756	106341	132926	159512	186097	212682	265853	319024
32-62	59902	53203	79806	106406	133008	159610	186211	212813	266016	319219
32-63	59927	53236	79854	106472	133090	159708	186325	212943	266179	319415
32-64	59951	53268	79903	106537	133171	159805	186440	213074	266342	319611
32-65	59976	53301	79952	106602	133253	159903	186554	213204	266506	319807
32-66	40000	53334	80001	106668	133334	160001	186665	213334	266669	320003
32-67	40025	53366	80050	106733	133416	160099	186783	213465	266832	320199
32-68	40049	53399	80099	106798	133497	160197	186897	213596	266995	320395
32-69	40074	53432	80148	106864	133579	160295	187011	213727	267159	320591
32-70	40098	53464	80197	106929	133661	160393	187136	213858	267322	320787
32-71	40123	53497	80246	106994	133743	160492	187240	213988	267486	320983
32-72	40147	53530	80295	107060	133825	160590	187355	214120	267650	321180
32-73	40172	53563	80344	107125	133907	160688	187469	214251	267813	321376
32-74	40197	53595	80393	107191	133988	160786	187584	214382	267977	321572
32-75	40221	53628	80442	107256	134070	160884	187698	214512	268141	321769
32-76	40246	53661	80491	107322	134152	160983	187813	214644	268304	321965
32-77	40270	53694	80540	107388	134234	161081	187928	214775	268468	322162
32-78	40295	53726	80590	107453	134316	161179	188042	214906	268632	322359
32-79	40319	53759	80639	107518	134398	161278	188157	215037	268796	322555
32-80	40344	53792	80688	107584	134480	161376	188272	215168	268960	322752
32-81	40369	53825	80737	107650	134562	161474	188387	215299	269124	322949
32-82	40393	53858	80786	107715	134644	161573	188502	215430	269288	323146
32-83	40418	53890	80836	107781	134726	161671	188617	215562	269452	323343
32-84	40442	53923	80886	107847	134808	161770	188731	215693	269616	323540
32-85	40467	53956	80934	107913	134890	161868	188846	215824	269781	323737
32-86	40492	53989	80983	107978	134972	161967	188961	215956	269945	323934
32-87	40516	54022	81033	108044	135055	162066	189076	216087	270109	324131
32-88	40541	54055	81083	108109	135137	162164	189192	216219	270274	324328
32-89	40566	54088	81131	108175	135219	162263	189307	216350	270438	324526
32-90	40590	54120	81181	108241	135301	162361	189422	216482	270602	324723
32-91	40616	54153	81230	108307	135383	162460	189537	216614	270767	324920
32-92	40640	54186	81279	108373	135466	162559	189652	216745	270932	325118
32-93	40664	54219	81329	108438	135548	162658	189767	216877	271096	325315
32-94	40689	54262	81378	108504	135630	162757	189883	217009	271261	325513
32-95	40714	54295	81428	108570	135713	162855	189998	217140	271426	325711
32-96	40739	54318	81477	108636	135795	162954	190113	217272	271590	325908
32-97	40763	54351	81527	108702	135878	163053	190239	217404	271755	326106
32-98	40788	54384	81576	108768	135960	163152	190344	217536	271920	326304
32-99	40813	54417	81626	108834	136043	163251	190460	217668	272085	326502
33-00	40837	54450	81675	108900	136125	163350	190575	217800	272250	326700

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Height in Feet.	3:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
33'01	40862	54483	81724	108966	136207	163449	190691	217933	272415	326898
33'02	40887	54516	81774	109022	136290	163548	190806	218064	272580	327096
33'03	40912	54549	81824	109078	136378	163647	190922	218196	272745	327294
33'04	40937	54582	81873	109134	136465	163746	191037	218328	272910	327492
33'05	40961	54615	81923	109190	136558	163845	191153	218460	273076	327691
33'06	40986	54648	81972	109246	136650	163945	191269	218593	273241	327889
33'07	41011	54681	82022	109302	136703	164044	191384	218725	273406	328087
33'08	41036	54714	82071	109358	136786	164143	191500	218857	273572	328286
33'09	41061	54747	82121	109415	136868	164242	191616	218990	273737	328484
33'10	41086	54780	82171	109461	136951	164341	191732	219122	273903	328683
33'11	41110	54814	82220	109527	137034	164441	191848	219254	274068	328882
33'12	41135	54847	82270	109593	137117	164540	191964	219387	274233	329080
33'13	41160	54880	82320	109659	137200	164640	192079	219519	274399	329279
33'14	41185	54913	82369	109726	137282	164739	192195	219652	274565	329478
33'15	41210	54946	82419	109792	137365	164838	192311	219784	274731	329677
33'16	41234	54979	82469	109858	137448	164938	192427	219917	274896	329876
33'17	41259	55012	82519	110025	137531	165037	192544	220050	275062	330075
33'18	41284	55046	82568	110091	137614	165137	192660	220182	275228	330274
33'19	41309	55079	82618	110158	137697	165236	192776	220315	275394	330473
33'20	41334	55112	82668	110224	137780	165336	192892	220448	275560	330672
33'21	41359	55145	82718	110290	137863	165436	193008	220581	275726	330871
33'22	41384	55178	82768	110357	137946	165535	193124	220714	275892	331070
33'23	41409	55212	82817	110423	138029	165635	193241	220847	276058	331269
33'24	41434	55245	82867	110490	138112	165735	193357	220980	276224	331468
33'25	41459	55278	82917	110556	138195	165834	193473	221112	276390	331667
33'26	41484	55311	82967	110623	138278	165934	193590	221245	276556	331866
33'27	41509	55345	83017	110689	138363	166034	193706	221379	276723	332065
33'28	41533	55378	83067	110756	138444	166134	193823	221512	276889	332264
33'29	41558	55411	83117	110822	138528	166234	193939	221645	277056	332463
33'30	41583	55444	83167	110889	138611	166333	194055	221778	277222	332662
33'31	41608	55478	83217	110955	138694	166433	194172	221911	277389	332861
33'32	41633	55511	83267	111022	138778	166533	194289	222022	277556	333060
33'33	41658	55544	83317	111089	138861	166633	194406	222178	277722	333259
33'34	41683	55578	83367	111156	138944	166735	194523	222311	277889	333458
33'35	41708	55611	83417	111223	139029	166835	194639	222444	278056	333657
33'36	41733	55644	83467	111289	139111	166938	194756	222578	278222	333856
33'37	41758	55678	83517	111356	139195	167034	194873	222711	278389	334055
33'38	41783	55711	83567	111422	139278	167134	194989	222845	278556	334254
33'39	41808	55745	83617	111489	139361	167234	195106	222978	278723	334453
33'40	41833	55778	83667	111556	139440	167334	195218	223112	278889	334652
33'41	41858	55811	83717	111623	139529	167434	195340	223245	279056	334851
33'42	41883	55845	83767	111689	139612	167534	195457	223379	279222	335050
33'43	41908	55878	83817	111756	139696	167635	195574	223512	279389	335249
33'44	41933	55912	83867	111823	139779	167735	195691	223647	279556	335448
33'45	41958	55945	83917	111890	139863	167835	195808	223780	279723	335647
33'46	41983	55978	83967	111957	139946	167936	195925	223914	279889	335846
33'47	42008	56012	84017	112024	140030	168036	196043	224048	280056	336045
33'48	42033	56046	84067	112091	140114	168137	196160	224182	280222	336244
33'49	42058	56079	84117	112158	140197	168237	196277	224315	280389	336443
33'50	42083	56112	84167	112225	140281	168337	196394	224448	280556	336642

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Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
33-51	42109	56146	84219	112292	140365	168438	196511	224584	280730	336876
33-52	42135	56180	84269	112359	140449	168539	196628	224718	280896	337077
33-53	42160	56218	84320	112426	140533	168639	196746	224852	281066	337278
33-54	42185	56247	84370	112493	140616	168740	196863	224986	281233	337479
33-55	42210	56280	84420	112560	140700	168846	196980	225120	281401	337681
33-56	42235	56314	84471	112627	140784	168941	197098	225255	281568	337882
33-57	42260	56347	84521	112694	140868	169042	197215	225389	281736	338083
33-58	42286	56381	84571	112762	140952	169142	197333	225523	281904	338285
33-59	42311	56414	84622	112829	141036	169243	197450	225658	282072	338486
33-60	42336	56448	84672	112896	141120	169344	197568	225792	282240	338688
33-61	42361	56482	84722	112963	141204	169445	197686	225926	282408	338890
33-62	42386	56515	84773	113030	141288	169546	197803	226061	282576	339091
33-63	42412	56549	84823	113098	141372	169647	197921	226195	282744	339293
33-64	42437	56582	84874	113165	141456	169747	198039	226330	282912	339495
33-65	42462	56616	84924	113232	141540	169848	198156	226464	283081	339697
33-66	42487	56650	84975	113300	141624	169949	198274	226599	283249	339899
33-67	42513	56683	85025	113367	141708	170050	198392	226734	283417	340101
33-68	42538	56717	85076	113434	141793	170151	198510	226868	283586	340303
33-69	42563	56751	85126	113502	141877	170252	198628	227003	283754	340505
33-70	42588	56784	85177	113569	141961	170353	198746	227138	283922	340707
33-71	42614	56818	85227	113636	142045	170455	198864	227273	284091	340909
33-72	42639	56852	85278	113704	142130	170556	198982	227408	284260	341112
33-73	42664	56886	85328	113771	142214	170657	199100	227543	284428	341314
33-74	42690	56919	85379	113839	142298	170758	199218	227678	284597	341516
33-75	42715	56953	85430	113906	142383	170859	199336	227812	284766	341719
33-76	42740	56987	85480	113974	142467	170961	199454	227948	284934	341921
33-77	42766	57021	85531	114041	142552	171062	199572	228083	285103	342124
33-78	42791	57054	85582	114109	142636	171163	199690	228218	285272	342327
33-79	42816	57088	85632	114176	142720	171265	199809	228353	285441	342529
33-80	42841	57122	85683	114244	142805	171366	199927	228488	285610	342732
33-81	42867	57156	85734	114312	142889	171467	200045	228623	285779	342935
33-82	42892	57190	85784	114379	142974	171569	200164	228758	285948	343138
33-83	42918	57223	85835	114447	143059	171670	200282	228893	286117	343341
33-84	42943	57257	85886	114515	143143	171772	200400	229029	286286	343544
33-85	42968	57291	85937	114582	143228	171873	200519	229164	286455	343747
33-86	42994	57325	85987	114650	143312	171975	200637	229300	286625	343950
33-87	43019	57359	86038	114718	143397	172076	200756	229435	286794	344153
33-88	43045	57393	86089	114785	143482	172178	200875	229571	286964	344356
33-89	43070	57427	86140	114853	143567	172280	200993	229706	287133	344559
33-90	43095	57460	86191	114921	143651	172381	201112	229842	287302	344762
33-91	43121	57494	86242	114989	143736	172483	201230	229978	287472	344965
33-92	43146	57528	86292	115057	143821	172585	201349	230113	287642	345168
33-93	43172	57562	86343	115124	143906	172687	201468	230249	287811	345371
33-94	43197	57596	86394	115192	143990	172789	201587	230385	287981	345574
33-95	43223	57630	86445	115260	144075	172890	201705	230520	288151	345777
33-96	43248	57664	86496	115328	144160	172992	201824	230656	288320	345980
33-97	43274	57698	86547	115396	144245	173094	201943	230792	288490	346183
33-98	43299	57732	86598	115464	144330	173196	202062	230928	288660	346386
33-99	43324	57766	86649	115532	144415	173298	202181	231064	288830	346589
34-00	43350	57800	86700	115600	144500	173400	202300	231200	289000	346800

TABLE III.—Of Earthwork in Cutting or Embankment for single Slopes of 100 feet length in Cubic Feet, Surface of Ground Level, height increasing by 1 foot.

Height in Feet.	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
34:10	43605	58140	87210	116281	145851	174421	203491	232562	290702
34:20	43861	58482	87723	116964	146205	175446	204687	233928	292410
34:30	44118	58824	88236	117649	147060	176473	205885	235298	294122
34:40	44376	59168	88752	118336	147920	177504	207088	236672	295840
34:50	44584	59512	89268	119025	148280	178537	208293	238050	297562
34:60	44898	59858	89787	119716	149645	179574	209503	239432	299290
34:70	45163	60204	90306	120409	150511	180613	210713	240818	301022
34:80	45418	60552	90828	121104	151380	181656	211932	242208	302760
34:90	45676	60900	91350	121801	152251	182701	213151	243602	304502
35:00	45937	61250	91875	122500	153125	183750	214375	245000	306250
35:10	46200	61600	92400	123201	154001	184801	215601	246402	308002
35:20	46464	61952	92928	123904	154800	185856	216832	247808	309760
35:30	46728	62304	93456	124609	155761	186913	218065	249218	311522
35:40	46993	62658	93987	125316	156645	187974	219303	250632	313290
35:50	47269	63012	94518	126025	157531	189037	220543	252050	315062
35:60	47526	63368	95052	126736	158420	190104	221788	253472	316840
35:70	47793	63724	95586	127449	159311	191178	223035	254898	318622
35:80	48061	64082	96123	128164	160205	192246	224287	256328	320410
35:90	48330	64440	96660	128881	161101	193321	225541	257762	322202
36:00	48600	64800	97200	129600	162000	194400	226800	259200	324000
36:10	48870	65160	97740	130321	162901	195481	228061	260642	325802
36:20	49141	65522	98283	131044	163805	196566	229327	262088	327610
36:30	49413	65884	98826	131769	164711	197653	230595	263538	329422
36:40	49686	66248	99372	132496	165620	198744	231868	264992	331240
36:50	49959	66612	99918	133225	166531	199837	233143	266450	333062
36:60	50233	66978	100467	133956	167445	200934	234423	267912	334890
36:70	50508	67344	101016	134689	168361	202033	235705	269378	336722
36:80	50784	67712	101568	135424	169286	203136	236912	270848	338550
36:90	51060	68080	102120	136161	170201	204241	238281	272322	340402
37:00	51337	68450	102675	136900	171125	205350	239575	273800	342250
37:10	51615	68820	103280	137641	172051	206461	240811	275282	344162
37:20	51894	69192	103788	138384	172980	207576	242172	276768	345960
37:30	52173	69564	104346	139129	173910	208693	243474	278258	347822
37:40	52453	69938	104907	139876	174845	209814	244793	279752	349690
37:50	52734	70312	105468	140625	175781	210937	246093	281250	351562
37:60	53016	70688	106032	141376	176720	212064	247408	282752	353440
37:70	53298	71064	106596	142129	177661	213193	248725	284268	355322
37:80	53581	71442	107163	142884	178605	214326	250047	285768	357210
37:90	53865	71820	107730	143641	179551	215461	251371	287282	359102
38:00	54150	72200	108300	144400	180500	216600	252700	288800	361000
38:10	54435	72580	108870	145161	181451	217741	254031	290322	362902
38:20	54721	72962	109443	145924	182405	218886	255367	291848	364810
38:30	55008	73344	110016	146689	183361	220033	256705	293378	366722
38:40	55296	73728	110592	147456	184320	221184	258048	294912	368640
38:50	55584	74112	111168	148225	185280	222336	259392	296450	370562
38:60	55873	74498	111747	148996	186245	223494	260743	297992	372490
38:70	56163	74884	112326	149769	187210	224653	262095	299538	374422
38:80	56454	75272	112908	150544	188180	225816	263452	301088	376360
38:90	56745	75660	113490	151321	189150	226980	264810	302642	378302
39:00	57037	76050	114075	152100	190125	228150	266175	304200	380250

TABLE III.—Of Earthwork in Cutting or Embankment for single Slopes of 100 feet length in Cubic Feet, Surface of Ground Level, height increasing by '1 foot.

Height in Feet.	1:1	1:1	1½:1	2:1	2½:1	3:1	3½:1	4:1	5:1	6:1
39'10	57330	76440	114660	152881	191100	229320	267540	305762	382202	458643
39'20	57624	76832	115248	153664	192080	230496	268912	307328	384260	461092
39'30	57918	77224	115836	154449	193060	231672	270284	308898	386122	463347
39'40	58213	77618	116427	155236	194045	232854	271653	310472	388090	465708
39'50	58509	78012	117018	156025	195020	234037	273043	312050	390062	468075
39'60	58806	78408	117612	156816	196020	235224	274428	313632	392040	470448
39'70	59103	78804	118206	157609	197010	236413	275815	315218	394022	472827
39'80	59401	79202	118803	158404	198005	237606	277207	316808	396010	475212
39'90	59700	79601	119400	159201	199001	238801	278601	318402	398002	477603
40'00	60000	80000	120000	160000	200000	240000	280000	320000	400000	480000
40'10	60300	80400	120600	160801	201001	241201	281401	321602	402002	482403
40'20	60601	80802	121203	161604	202005	242406	282807	323208	404010	484812
40'30	60903	81204	121806	162409	203011	243613	284215	324818	406022	487227
40'40	61206	81608	122412	163216	204020	244824	285628	326432	408040	489646
40'50	61509	82012	123018	164025	205031	246037	287043	328050	410062	492075
40'60	61813	82418	123627	164836	206045	247254	288463	329672	412090	494508
40'70	62118	82824	124236	165649	207061	248473	289886	331298	414122	496947
40'80	62424	83232	124848	166464	208080	249696	291312	332928	416160	499392
40'90	62730	83640	125460	167281	209101	250921	292741	334562	418202	501843
41'00	63037	84050	126075	168100	210125	252150	294175	336200	420250	504300
41'1	63345	84460	126690	168921	211151	253381	295611	337842	422302	506763
41'2	63654	84872	127308	169744	212180	254616	297052	339488	424360	509232
41'3	63963	85284	127926	170569	213211	255855	298495	341188	426422	511707
41'4	64273	85698	128547	171396	214245	257094	299943	342792	428490	514188
41'5	64584	86112	129168	172225	215281	258337	301398	344450	430562	516675
41'6	64896	86528	129792	173056	216320	259584	302848	346112	432640	519168
41'7	65208	86944	130416	173889	217361	260833	304305	347778	434722	521667
41'8	65521	87362	131043	174724	218405	262086	305767	349448	436810	524172
41'9	65835	87780	131670	175561	219451	263341	307231	351122	438902	526683
42'0	66150	88200	132300	176400	220500	264600	308700	352800	441000	529200
42'1	66465	88620	132930	177241	221551	265861	310171	354482	443102	531723
42'2	66781	89042	133563	178084	222605	267126	311647	356168	445210	534252
42'3	67098	89464	134196	178929	223661	268395	313125	357858	447322	536787
42'4	67416	89888	134832	179776	224720	269664	314608	359552	449440	539328
42'5	67734	90312	135468	180625	225781	270937	316093	361250	451562	541875
42'6	68053	90738	136107	181476	226845	272214	317588	362972	453710	544428
42'7	68373	91164	136746	182329	227911	273495	319075	364658	455822	546987
42'8	68694	91592	137388	183184	228980	274776	320572	366368	457960	549552
42'9	69015	92020	138030	184041	230051	276061	322071	368082	460102	552123
43'0	69337	92450	138675	184900	231125	277360	323575	369800	462250	554700
43'1	69660	92880	139320	185761	232201	278641	325081	371522	464402	557283
43'2	69984	93312	139968	186624	233280	279936	326592	373248	466560	559872
43'3	70308	93744	140616	187489	234361	281233	328105	374978	468722	562467
43'4	70634	94178	141267	188356	235445	282544	329628	376712	470890	565068
43'5	70959	94612	141918	189225	236530	283856	331132	378439	473051	567675
43'6	71286	95048	142572	190096	237620	285144	332668	380192	475240	570288
43'7	71613	95484	143226	190969	238711	286453	334195	381938	477422	572907
43'8	71941	95922	143883	191844	239805	287766	335727	383688	479610	575532
43'9	72270	96360	144540	192721	240901	289081	337261	385442	481802	578163
44'0	72600	96800	145200	193600	242000	290400	338800	387200	484000	580800

TABLE III.—Of Earthwork in Cutting or Embankment for single Slopes of 100 feet length in Cubic Feet, Surface of Ground Level, height increasing by 1 foot.

Height in Feet.	1 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
44'1	72980	97240	145860	194481	243101	291721	340341	388962	486202	588443
44'2	73261	97682	146528	195364	244205	293046	341887	390728	488410	586092
44'3	73593	98124	147186	196249	245311	294373	343435	392498	490622	588747
44'4	73926	98568	147852	197136	246420	295704	344968	394272	492840	591408
44'5	74259	99012	148518	198025	247531	297037	346543	396050	495062	594075
44'6	74593	99458	149187	198916	248645	298374	348108	397832	497290	596748
44'7	74928	99904	149856	199809	249761	299713	349665	399618	499522	599427
44'8	75264	100352	150528	200704	250880	301056	351232	401408	501760	602112
44'9	75600	100800	151200	201601	252001	302401	352801	403202	504002	604803
45'0	75937	101250	151875	202500	253125	303750	354375	405000	506250	607500
45'1	76275	101700	152550	203401	254251	305101	355951	406802	508502	610203
45'2	76614	102152	153228	204304	255380	306456	357532	408608	510760	612912
45'3	76953	102604	153906	205209	256511	307813	359115	410418	513022	615627
45'4	77293	103058	154587	206116	257645	309174	360703	412232	515290	618348
45'5	77634	103512	155268	207025	258781	310537	362293	414050	517562	621075
45'6	77976	103968	155952	207936	259920	311904	363888	415872	519840	623808
45'7	78318	104424	156636	208849	261063	313275	365487	417700	522124	626547
45'8	78661	104882	157323	209764	262205	314646	367087	419528	524410	629292
45'9	79005	105340	158010	210681	263351	316021	368691	421362	526702	632043
46'0	79350	105800	158700	211600	264500	317400	370300	423200	529000	634800
46'1	79695	106260	159390	212521	265651	318781	371911	425042	531302	637563
46'2	80043	106722	160084	213444	266806	320168	373530	426892	533614	640332
46'3	80398	107184	160776	214369	267961	321553	375145	428738	535922	643107
46'4	80756	107648	161472	215296	269120	322944	376768	430592	538240	645888
46'5	81084	108112	162168	216225	270281	324337	378393	432450	540562	648675
46'6	81438	108578	162867	217156	271445	325734	380028	434312	542890	651468
46'7	81793	109044	163566	218089	272611	327135	381655	436178	545222	654267
46'8	82134	109512	164268	219024	273780	328536	383292	438048	547560	657072
46'9	82485	109980	164970	219961	274951	329941	384931	439912	549902	659888
47'0	82837	110450	165675	220900	276125	331330	386575	441800	552250	662700
47'1	83190	110920	166381	221841	277301	332761	387222	443682	554602	665523
47'2	83544	111392	167088	222784	278480	334176	388872	445568	556960	668352
47'3	83898	111864	167797	223729	279161	335593	391524	447458	559322	671187
47'4	84253	112338	168507	224676	280345	337014	393183	449352	561690	674038
47'5	84609	112812	169219	225625	281531	338437	394844	451250	564062	676895
47'6	84966	113288	169932	226576	282720	339863	396508	453152	566440	679768
47'7	85323	113764	170647	227529	284111	341293	398176	455058	568822	682648
47'8	85681	114242	171363	228484	285505	342716	399847	456968	571210	685532
47'9	86040	114720	172081	229441	286901	344161	401522	458882	573602	688428
48'0	86400	115200	172800	230400	288300	345600	403200	460800	576000	691300
48'1	86760	115680	173521	231361	289701	347041	404881	462722	578402	694165
48'2	87121	116162	174243	232324	291105	348488	406567	464648	580810	697032
48'3	87483	116644	174967	233289	292511	349933	408256	466518	583222	699907
48'4	87846	117128	175692	234256	293920	351384	409948	468352	585640	702788
48'5	88209	117612	176419	235225	295331	352837	411644	470150	588062	705675
48'6	88573	118098	177147	236196	296745	354294	413433	471952	590490	708568
48'7	88938	118584	177877	237169	298161	355753	415246	473838	592922	711467
48'8	89303	119072	178608	238144	299580	357216	417073	475738	595360	714372
48'9	89670	119560	179341	239121	301001	358681	418913	477642	597802	717285
49'0	90037	120050	180075	240100	302425	360150	420750	479550	600250	720200

TABLE III.—Of Earthwork in Cutting or Embankment for single Slopes* of 100 feet length in Cubic Feet, Surface of Ground Level, height increasing by '1 foot.

Height in Feet.	2:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
49.1	90405	120540	180810	241081	301351	361621	421891	482162	602702	723243
49.2	90774	121032	181548	243064	302580	363096	423612	484128	605160	726192
49.3	91143	121524	182287	245049	303511	364573	425596	486098	607622	729147
49.4	91513	122018	183027	247036	305046	366054	427063	488072	610090	732108
49.5	91884	122512	183769	249025	306281	367537	428794	490050	612562	735076
49.6	92256	123008	184512	249016	307520	369024	430528	492032	615040	738048
49.7	92628	123504	185257	247009	308761	370513	432264	494018	617522	741027
49.8	93002	124002	186003	248004	310015	372006	434007	496008	620010	744012
49.9	93375	124500	186751	249001	311251	373501	435752	498002	622502	747008
50.0	93750	125000	187500	250000	312500	375000	437500	500000	625000	750000
50.1	94125	125500	188251	251001	313751	376501	439252	502002	627502	753003
50.2	94501	126002	189003	252004	315005	378006	441007	504008	630010	756012
50.3	94878	126504	189757	253009	316261	379513	442766	506018	632522	759027
50.4	95256	127008	190512	254016	317520	381024	444528	508032	635040	762048
50.5	95634	127512	191269	255025	318781	382537	446294	510050	637562	765076
50.6	96013	128018	192027	256036	320045	384054	448063	512072	640090	768108
50.7	96393	128524	192787	257049	321311	385573	449836	514098	642622	771147
50.8	96774	129032	193548	258064	322580	387096	451612	516128	645160	774192
50.9	97156	129540	194311	259081	323851	388621	453392	518162	647702	777243
51.0	97537	130050	195075	260100	325125	390150	455175	520200	650250	780300
51.1	97920	130560	195841	261121	326401	391681	456962	522242	652802	783368
51.2	98304	131072	196608	262144	327680	393216	458752	524288	655360	786432
51.3	98688	131584	197377	263169	328961	394753	460546	526338	657922	789507
51.4	99073	132098	198147	264196	330245	396294	462343	528392	660490	792588
51.5	99459	132612	198919	265225	331531	397837	464144	530450	663062	795676
51.6	99846	133128	199692	266256	332820	399384	465948	532512	665640	798768
51.7	100233	133644	200467	267289	334111	400933	467756	534578	668222	801867
51.8	100622	134162	201243	268324	335415	402486	469567	536648	670810	804972
51.9	101010	134680	202021	269361	336701	404041	471382	538722	673402	808083
52.0	101400	135200	202800	270400	338000	405600	473200	540800	676000	811200
52.1	101790	135720	203581	271441	339301	407161	475022	542882	678602	814323
52.2	102181	136242	204363	272484	340605	408726	476847	545008	681210	817452
52.3	102573	136764	205147	273529	341911	410293	478676	547058	683822	820587
52.4	102966	137288	205932	274576	343220	411864	480508	549152	686440	823728
52.5	103359	137812	206719	275625	344531	413437	482344	551250	689062	826876
52.6	103753	138338	207507	276676	345845	415014	484188	553352	691690	830032
52.7	104148	138864	208297	277729	347161	416593	486026	555458	694322	833187
52.8	104544	139392	209088	278784	348480	418176	487872	557568	696960	836352
52.9	104940	139920	209881	279841	349801	419761	489722	559682	699602	839523
53.0	105337	140450	210675	280900	351125	421350	491575	561800	702250	842700
53.1	105735	140980	211471	281961	352451	422944	493432	563922	704902	845883
53.2	106134	141512	212268	283024	353780	424536	495292	566048	707560	849072
53.3	106533	142044	213067	284089	355111	426133	497156	568178	710222	852267
53.4	106933	142578	213867	285156	356445	427734	499028	570312	712890	855468
53.5	107334	143112	214669	286225	357781	429337	500894	572450	715562	858676
53.6	107736	143648	215473	287296	359120	430944	502768	574592	718240	861888
53.7	108138	144184	216277	288369	360461	432553	504646	576738	720922	865107
53.8	108541	144722	217083	289444	361805	434166	506527	578888	723610	868332
53.9	108945	145260	217891	290521	363151	435781	508412	581042	726302	871565
54.0	109350	145800	218700	291600	364500	437400	510300	583200	729000	874800

TABLE III.—Of Earthwork in Cutting or Embankment for single Slopes of 100 feet length in Cubic Feet, Surface of Ground Level, height Increasing by '1 foot.

Height in Feet.	4 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
54.1	109755	146340	219511	292681	365851	439021	512192	585362	731702	878043
54.2	110161	146882	220323	293764	367205	440646	514087	587528	734410	878292
54.3	110566	147424	221137	294849	368561	442273	515986	589698	737122	884547
54.4	110976	147968	221952	295936	369920	443904	517888	591872	739840	887808
54.5	111584	148512	222769	297025	371281	445537	519794	594050	742562	891075
54.6	111793	149056	223587	298116	372645	447174	521703	596232	745290	894348
54.7	112203	149604	224407	299209	374011	448813	523616	598418	748022	897627
54.8	112614	150152	225228	300304	375880	450456	525532	600608	750760	900912
54.9	113025	150700	226051	301401	376751	452101	527452	602802	753502	904209
55.0	113437	151250	226875	302500	378125	453750	529375	605000	756250	907507
55.1	113850	151800	227701	303601	379501	455401	531302	607202	759002	910803
55.2	114264	152352	228528	304704	380880	457056	533232	609408	761760	914112
55.3	114678	152904	229357	305809	382261	458713	535166	611618	764522	917427
55.4	115095	153458	230187	306916	383645	460374	537103	613832	767290	920748
55.5	115509	154012	231019	308025	385031	462037	539044	616050	770062	924075
55.6	115926	154568	231852	309136	386420	463704	540988	618272	772840	927408
55.7	116343	155124	232687	310249	387811	465373	542936	620498	775622	930747
55.8	116761	155680	233528	311364	3889205	467046	544887	622728	778410	934092
55.9	117180	156240	234361	312481	390601	468721	546842	624962	781202	937443
56.0	117600	156800	235200	313600	392000	470400	548800	627200	784000	940800
56.1	118020	157360	236041	314721	393401	472081	550762	629442	786802	944163
56.2	118441	157922	236883	315844	394805	473766	552727	631688	789610	947532
56.3	118863	158484	237727	316969	396211	475453	554696	633938	792422	950907
56.4	119286	159048	238572	318096	397620	477144	556668	636192	795240	954288
56.5	119709	159612	239419	319225	399031	478837	558644	638450	798062	957675
56.6	120126	160178	240262	320356	400420	480534	560618	640712	800840	961468
56.7	120558	160744	241117	321489	401861	482233	562606	642978	803722	964467
56.8	120984	161312	241968	322624	403280	483936	564592	645248	806650	967872
56.9	121410	161880	242821	323761	404701	485641	566582	647522	809402	968283
57.0	121837	162450	243675	324900	406125	487350	568575	649800	812250	974700
57.1	122265	163020	244531	326041	407551	489061	570572	652082	815102	978123
57.2	122694	163592	245388	327184	408980	490776	572572	654868	817960	981552
57.3	123123	164164	246247	328329	410411	492493	574576	656658	820822	984987
57.4	123553	164738	247107	329474	411845	494214	576583	658952	823690	988428
57.5	123984	165312	247969	330625	413281	495937	578594	661250	826562	991875
57.6	124416	165888	248832	331776	414720	497664	580608	663552	829440	995328
57.7	124848	166464	249697	332929	416161	499395	582626	665855	832322	998787
57.8	125281	167042	250563	334084	417605	501126	584647	668168	835210	1002262
57.9	125715	167620	251431	335241	419051	502861	586672	670483	838100	1005723
58.0	126150	168200	252300	336400	420500	504600	588700	672800	841000	1009200
58.1	126585	168780	253171	337561	421951	506341	590732	675122	843900	1012683
58.2	127021	169360	254043	338724	423405	508086	592767	677448	846810	1016172
58.3	127458	169945	254916	339889	424861	509834	594806	679778	849723	1019667
58.4	127896	170528	255792	341056	426320	511584	596848	682112	852640	1023168
58.5	128334	171113	256669	342226	427786	513337	598894	684450	855563	1026674
58.6	128774	171698	257547	343396	429245	515094	600943	686792	858490	1030188
58.7	129213	172284	258427	344569	430711	516854	602996	689138	861423	1033707
58.8	129653	172872	259308	345744	432180	518616	605052	691488	864360	1037232
58.9	130095	173461	260190	346921	433651	520380	607111	693842	867303	1040760
59.0	130538	174050	261075	348100	435125	522150	609176	696200	870250	1044300

TABLE III.—Of Earthwork in Cutting or Embankment for single Slopes of 100 feet length in Cubic Feet, Surface of Ground Level, height increasing by 1 foot.

Height in Feet.	1:1	1:1	1:1	2:1	2:1	3:1	3:1	4:1	5:1	6:1
59:1	130930	174640	261861	349281	436601	523722	611142	698562	787202	1047443
59:2	131424	175232	262848	350464	437530	525696	613312	700928	789160	1051392
59:3	131918	175824	263837	351449	438561	527473	615386	703298	791222	1054947
59:4	132413	176418	264826	352436	440104	529252	617462	705672	793290	1059504
59:5	132907	177012	265816	353425	442531	531036	619543	708050	795362	1062072
59:6	133402	177608	266812	354412	444020	532824	621628	710432	797432	1065648
59:7	133897	178204	267806	355409	445511	534612	623716	712818	799502	1069224
59:8	134392	178802	268802	356404	447005	536404	625807	715208	801572	1072800
59:9	134887	179400	269800	357400	448500	538200	627901	717602	803642	1076400
60:0	135000	180000	270000	360000	450000	540000	630000	720000	810000	1080000
60:1	135450	180600	270900	361201	451501	541800	632102	722402	812002	1083600
60:2	135901	181202	271803	362404	453005	543606	634207	724808	814010	1087212
60:3	136353	181804	272606	363609	454511	545212	636316	727218	816022	1090824
60:4	136806	182408	273612	364816	456020	547224	638428	729632	818040	1094448
60:5	137259	183012	274669	366025	457531	549337	640594	732050	820062	1098074
60:6	137713	183618	275427	367236	459045	550354	642663	734472	822090	1101708
60:7	138168	184224	276337	368449	460561	552673	644786	736898	824122	1105346
60:8	138624	184832	277248	369664	462080	554992	646912	739328	826160	1108992
60:9	139080	185440	278160	370881	463601	556321	649042	741762	828202	1112642
61:0	139537	186050	279075	372100	465125	558160	651175	744200	830250	1116300
61:1	139995	186660	279991	373321	466651	559981	653312	746642	832302	1119963
61:2	140454	187272	280908	374544	468180	561816	655452	749088	834360	1123632
61:3	140913	187884	281828	375769	469711	563653	657596	751538	836422	1127307
61:4	141373	188498	282847	376996	471245	565729	659743	753992	838490	1130988
61:5	141834	189112	283869	378225	472781	567937	661894	756450	840562	1134674
61:6	142296	189728	284892	379456	474320	569184	664048	758912	842640	1138368
61:7	142758	190344	285517	380689	475861	571033	666206	761378	844722	1142066
61:8	143221	190962	286543	381924	477405	572886	668367	763848	846810	1145772
61:9	143685	191580	287573	383161	478951	574741	670532	766322	848902	1149482
62:0	144150	192200	288600	384400	480500	576600	672700	768800	851000	1153200
62:1	144615	192820	289621	385641	482051	578461	674872	771282	853102	1156922
62:2	145081	193442	290663	386884	483605	580326	677047	773768	855210	1160652
62:3	145548	194064	291697	388129	485161	582193	679226	776248	857322	1164388
62:4	146016	194688	292832	389376	486716	584064	681408	778752	859440	1168126
62:5	146484	195312	293969	390625	488281	585937	683594	781250	861562	1171875
62:6	146953	195938	295007	391876	489845	587814	685783	783752	863690	1175628
62:7	147423	196564	296147	393129	491411	589693	687982	786258	865822	1179388
62:8	147895	197142	297193	394384	492985	591426	690197	788768	867960	1183152
62:9	148367	197720	298241	395641	494551	593461	692372	791282	870102	1186922
63:0	148837	198450	299675	396900	496125	595380	694575	793800	872250	1190700
63:1	149310	199080	299621	398161	497701	597251	696782	796322	874402	1194502
63:2	149784	199712	299568	399424	499280	599156	698992	798848	876560	1198272
63:3	150258	200344	300516	400689	500861	601033	701206	801378	1001722	1202066
63:4	150733	200978	301467	401956	502445	602934	703423	803912	1004890	1205868
63:5	151209	201612	302419	403225	504031	604837	705444	806440	1008062	1209674
63:6	151686	202248	303372	404496	505620	606744	707868	808992	1011240	1213488
63:7	152163	202884	304327	405769	507211	608653	710096	811538	1014422	1217307
63:8	152641	203522	305283	407044	508805	610566	712327	814088	1017610	1221132
63:9	153120	204160	306241	408321	510401	612491	714562	816642	1020800	1224965
64:0	153600	204800	307200	409600	512000	614400	716800	819200	1024000	1228800

TABLE III.—Of Earthwork in Cutting or Embankment for single Slopes of 100 feet length in Cubic Feet, Surface of Ground Level, height increasing by '1 foot.

Height in Feet.	1 : 1	1 : 1	1 1/2 : 1	2 : 1	2 1/2 : 1	3 : 1	3 1/2 : 1	4 : 1	5 : 1	6 : 1
64.1	154080	205440	308161	410881	513601	616321	719042	821762	1027200	1232649
64.2	154561	206082	309128	412164	515205	618246	721287	824328	1030410	1236492
64.3	155043	206724	310087	413449	516811	620173	723556	826898	1036820	1240347
64.4	155526	207368	311052	414736	518420	622104	725788	829472	1043630	1244208
64.5	156009	208012	312019	416025	520031	624037	728044	832050	1040060	1248075
64.6	156493	208658	312987	417316	521645	625974	730303	834682	1046290	1251948
64.7	156978	209304	313957	418609	523261	627913	732566	837218	1046520	1255827
64.8	157464	209952	314928	419904	524880	629856	734832	839808	1049760	1259712
64.9	157950	210600	315901	421201	526501	631801	737102	842402	1053000	1263603
65.0	158437	211250	316875	422500	528125	633760	739375	845000	1056250	1267500
65.1	158925	211900	317851	423801	529751	635701	741652	847602	1059500	1271403
65.2	159414	212552	318828	425104	531380	637656	743982	850208	1062760	1275312
65.3	159903	213204	319807	426409	533011	639613	746216	852818	1066020	1279227
65.4	160393	213858	320787	427716	534645	641574	748503	855482	1069280	1283148
65.5	160884	214512	321768	429025	536281	643537	750793	858050	1072562	1287074
65.6	161376	215168	322752	430336	537920	645504	753088	860672	1075840	1291008
65.7	161868	215824	323736	431649	539561	647473	755385	863298	1079122	1294947
65.8	162361	216482	324723	432964	541205	649446	757687	865928	1082410	1298892
65.9	162855	217140	325710	434281	542851	651421	759991	868562	1085702	1302843
66.0	163350	217800	326700	435600	544500	653400	762300	871200	1089000	1306800
66.1	163845	218460	327690	436921	546151	655381	764611	873842	1092302	1310762
66.2	164341	219122	328683	438244	547805	657366	766927	876488	1095610	1314732
66.3	164838	219784	329676	439569	549461	659353	769245	879188	1098922	1318707
66.4	165336	220448	330672	440896	551120	661344	771568	881792	1102240	1322688
66.5	165834	221112	331668	442225	552781	663337	773893	884450	1105562	1326675
66.6	166333	221778	332667	443556	554445	665334	776223	887212	1108890	1330668
66.7	166833	222444	333666	444889	556111	667333	778555	889778	1112222	1334667
66.8	167334	223112	334668	446224	557780	669336	780892	892448	1115560	1338672
66.9	167835	223780	335745	447561	559456	671491	783406	895322	1118912	1342683
67.0	168337	224450	336675	448900	561120	673945	785570	897795	1122245	1346696
67.1	168840	225120	337680	450241	562801	675361	787921	900482	1125602	1350723
67.2	169344	225792	338688	451584	564480	677376	790272	903182	1128960	1354752
67.3	169848	226464	339696	452929	566161	679393	792625	905888	1132322	1358786
67.4	170353	227138	340707	454276	567845	681414	794983	908552	1135680	1362828
67.5	170858	227812	341713	455625	569526	683427	797326	911220	1139042	1366855
67.6	171364	228488	342732	456976	571220	685444	799708	913952	1142440	1370928
67.7	171873	229164	343746	458329	572911	687493	802075	916658	1145822	1374986
67.8	172381	229842	344763	459684	574605	689526	804447	919368	1149210	1379053
67.9	172890	230520	345780	461041	576301	691561	806821	922082	1152602	1383133
68.0	173400	231200	346800	462400	578000	693600	809200	924800	1156000	1387200
68.1	173910	231880	347820	463761	579701	695641	811581	927522	1159402	1391283
68.2	174421	232562	348843	465124	581405	697686	813967	930248	1162810	1395372
68.3	174933	233244	349866	466489	583111	699733	816355	932978	1166222	1399467
68.4	175446	233928	350892	467856	584820	701784	818743	935712	1169640	1403568
68.5	175959	234612	351918	469226	586531	703837	821143	938450	1173062	1407675
68.6	176473	235298	352947	470596	588245	705894	823543	941192	1176490	1411789
68.7	176988	235984	353976	471969	589961	707953	825945	943938	1179922	1415903
68.8	177503	236672	355008	473344	591680	710016	828352	946688	1183360	1420023
68.9	178018	237360	356040	474721	593401	712081	830761	949442	1186802	1424148
69.0	178533	238050	357075	476100	595125	714150	833175	952200	1190250	1428300

TABLE III.—Of Earthwork in Cutting or Embankment for single Slopes of 100 feet length in Cubic Feet, Surface of Ground Level, height increasing by 1 foot.

Height in Feet.	2 : 1	1 : 1	1½ : 1	2 : 1	2½ : 1	3 : 1	3½ : 1	4 : 1	5 : 1	6 : 1
69.1	179055	238740	358110	477481	596851	716221	835591	954962	1193702	1432443
69.2	179574	239432	359148	478864	598580	718296	838012	957728	1197160	1436592
69.3	180093	240124	360187	480249	600311	720373	840436	960498	1200622	1440747
69.4	180613	240816	361227	481636	602046	722454	842863	963272	1204090	1444908
69.5	181134	241512	362268	483025	603781	724537	845293	966050	1207562	1449075
69.6	181656	242208	363312	484416	605520	726624	847728	968832	1211040	1453248
69.7	182178	242904	364356	485809	607261	728718	850165	971618	1214522	1457427
69.8	182701	243602	365403	487204	609005	730806	852607	974408	1218010	1461612
69.9	183225	244300	366450	488601	610751	732901	855051	977202	1221502	1465803
70.0	183750	245000	367500	490000	612500	735000	857500	980000	1225000	1470000

Chapter IV.—Application of the Tables I, II and III, for Finding the Areas of Cross-sections of Embankments and Cuts.

24. Calculation of Area of the Cross-section of a Bank or of a Cut when the Ground is Level Across.—From Equations 24 and 25, Art. 18, p. 9, we have (Figs. 1-2):

$$A = \text{The area of the cross-section} = bd + \frac{1}{2} d^2 (S + S^1) \quad \dots (35).$$

$$\text{Where } S = S^1, A = bd + d^2 S \quad \dots (36).$$

The area can be found from the known values of b , d , S and S^1 .

Ex. 18. Let the top width, $b = 20'$, height of bank, $d = 10.5'$, and side-slopes = $1\frac{1}{2}$ to 1. Required the area of the cross-section, A .

$$\therefore A = bd + d^2 S = 20 \times 10.5 + 10.5^2 \times \frac{3}{2} = 210 + 165.375 = 375.375 \text{ sq. ft.}$$

From Table I, pp. 10 and 48, for central portion for depths of 0.5' and 10' = (10 c. ft. and 200 c. ft. i.e., total = 210 c. ft.) is found for a width 20' = 2 × 10', and heights, 10' + 0.5' = 10.5'; and from Table II, p. 74, 165.375 is found for slope-ratio, 3 to 1, and height 10.5'.

Ex. 19. The top of an embankment is 5' wide, height of bank = 12', front and rear slopes are 3 to 1 and 2 to 1. Required the area of cross-section.

$$A = bd + \frac{1}{2} d^2 (S + S^1) = 12 \times 5 + \frac{1}{2} \times 12^2 (2 + 3) = 60 + 360 = 420 \text{ sq. ft.}$$

From the Table I for the central portion, pp. 16 and 48, we find for heights of 2' and 10' (which added together equal 12'), and width 5', the area of cross-section $bd = 60$ sq. ft., also same from p. 28 for height 5' × width 12'; and from the Table II for the slopes (p. 77) we find for a height of 12', and side slopes, 3 to 1 and 2 to 1, the areas to be 216 sq. ft. and 144 sq. ft., respectively, and these two areas equal 360 sq. ft. which can also be found from column for slope, 5 : 1, at 12' height. Hence the total area = 60 + 360 = 420 sq. ft.

Ex. 20. Find the areas of cross-sections of pieces of earthwork on side-long ground in Examples 3 and 4, respectively, on pp. 6 and 7.

In Ex. 3, CR = depth of equivalent cutting = 25.44'. By Eqn. (4), $A = bd + d^2 S$. From Table I, pp. 31 and 51, the central portion $bd = 130.56 + 480 = 610.56$ sq. ft. for depths of 5.44' and 20' = 25.44', and width of roadway 24'.

From Table II, p. 104, the slope portion $d'S = 970.79$ sq. ft. for a depth $25.44'$, and two side slopes $1\frac{1}{2}$ to 1, or taking for 1 slope of 3 to 1.

∴ The area of cross-section $= 610.56 + 970.79 = 1581.35$ sq. ft.

Ex. 21. In Example 4, $CB =$ depth of equivalent cutting $= 14.55$ feet.

From Table I, pp. 29 and 49, the central portion, bd for a depth of $14.55' = (4.55 + 10')$ and breadth $18' = 81.90 + 180 = 261.90$ sq. ft.

From Table II, p. 93, the slope portions $d'S$

for a depth of $14.55'$ and side slope 4 to 1 ... $= 423.40$ „

∴ The area of cross-section $= 261.90 + 423.40$... $= 685.30$ „

25. Calculation of Area of Cross-section of a piece of Earthwork in an Embankment when the Ground has an uniform Side-long Slope not intersecting the Base:—
(Fig. 8).

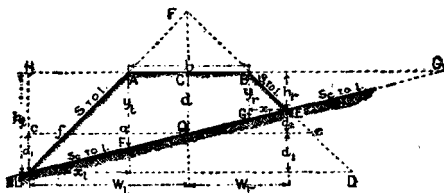


Fig. 8.—Cross-section of a Bank or of a Cutting on Cross-slope not Intersecting the Base.

1st Method.—Area $ABEL = \frac{1}{2} \{x_i \times y_i + (y_i + y_r)b + x_r \times y_r\}$ (37).

Substituting the values of x_i , y_i , x_r , and y_r given in equations (4), (5), (13) and (14) on p. 4, we have

$$A = \frac{SS_c}{2(S_c - S)} \left(d + \frac{b}{2S_c} \right)^2 + db + \frac{S_1 S_c}{2(S_c + S_1)} \left(d - \frac{b}{2S_c} \right)^2 \dots (38).$$

If $S = S_1$, Eqn. (38) becomes

$$A = \left(S_c^2 sd^2 + \frac{sb^2}{4} + bds_c^2 \right) / (S_c^2 - S^2) \dots (39).$$

2nd Method.—Let LA and EB be produced to meet in F , and $S_1 = S$, (Fig. 8). Hence Area of $ABEL =$

$$A = \triangle ELF - \triangle ABF = \frac{1}{2} (FQ \times (W_i + W_r)) - \frac{1}{2} AB \times CF$$

but $AB = b$; $FC = b/2S$; and $FQ = d + b/2S$;

$$W_i + W_r = S_c^2 (2dS + b) / (S_c^2 - S^2);$$

$$A = \frac{S_c^2 S}{S_c^2 - S^2} \left(d + \frac{b}{2S} \right)^2 - \frac{b^2}{4S} \dots (40).$$

This formula is convenient for use with a Table of Squares.

3rd Method.—Area of ABEL = Area ABDL - $\triangle$ EDL (41). (Fig. 8). This is suitable for use with the Tables I, II and III, as shown by Example 23 given below:—

4th Method.—Area of ABEL (Fig. 8). =
Area of $\triangle$ LHG₁ - Area of $\triangle$ LHA - Area of $\triangle$ BEG₁,
$$= -\frac{h^2 r}{2} (s_c - g) - \frac{h^2}{2} (s_c + s_1) \quad (42).$$

Ex. 22. Find the Area of Cross-section of a Bank having a top width of 16', and side slopes 1 to 1, across a piece of ground with a cross-slope of 4 to 1, centre-height of bank 10'.

By Eqn. (39) above, $A = (4^2 \times 1 \times 10^2 + \frac{1 \times 16^2}{4} + 16 \times 10 \times 4^2) / (4^2 - 1^2) = 281.6$ sq. ft.

By Formula (40) above, $A = \frac{16 \times 1}{16 - 1} \left(10 + \frac{16}{2 \times 1} \right)^2 - \frac{16^2}{4 \times 1} = 281.6$ sq. ft.

Calculate x_1 and x_2 , and then by the aid of Tables I and II, go on as under:—

$$x_1 = \frac{S(Sc d + \frac{1}{2} b)}{Sc - S} = 16', \quad x_2 = \frac{S_1(Sc d - \frac{1}{2} b)}{Sc + S_1} = 6.4', \text{ from Eqns. (13 and 14) p. 4.}$$

Slope-ratios, for $\triangle$ ALF = $1 - \frac{1}{4} = \frac{3}{4}$ for $\triangle$ BGE = $1 + \frac{1}{4} = 1\frac{1}{4}$.

From Table I, area of centre portion for a height of 10' and top width 16' (p. 49) = ... 160.0 sq. ft.

From Slope Table II, area of $\triangle$ ALF for a slope-ratio $\frac{3}{4}$ and height 16' (p. 85.) = ... 96.0 "

From Slope Table II, area of $\triangle$ BGE for a slope-ratio $1\frac{1}{4}$ = $\frac{1}{2} \times 2\frac{1}{2}$ and height 6.4' = $\frac{1}{2} \times 51.20$ (p. 66) ... 25.6 "

Total ... 281.6 "

Ex. 23. Find the Area of Cross-section of a Bank on Side-long Ground in Example 2, p. 4.

From Table I, pp. 51 and 45, area of central portion for depth 28.576', say = 28.58 = 20' + 8.58, and top-width 24' = 480 + 205.92 = 685.92 sq. ft.

From Table II, p. 111, area of slope portion for a slope of 3 to 1 and the same height 28.576' = 28.58, say ... = 1225.22 "

$\therefore$ Area of ABDL = 685.92 + 1225.22 = ... = 1911.14 "

From Table II, p. 83, Deduct area of $\triangle$ EDL, slope portion, for a height of 19.95 for slopes of 4 to 1 and $1\frac{1}{4}$ to 1 = 798.00 + 298.50 = 1096.50 "

$\therefore$ The area of the bank ... = 816.64 "

By formula above (41) the result is also 816.11 sq. ft. after working to four places of decimals for the exact height 28.576.

26. The Increase in Area Due to Side-long Ground.—

Referring to Fig. 8, we have the increase in area of a bank or cut due to side-long ground over ground considered as level across is indicated by the Eqn., $I = \text{Area of } \triangle L/Q - \triangle Q/E$. And substituting the values of W_1, W_2, d_1, d_2 in Eqns. 6.9, p. 4, we have:—

$$I = (W_1 - d_1 S) \frac{d_1}{2} - (W_2 + d_2 S) \frac{d_2}{2} = -\frac{S(\frac{1}{2} b + S d)^2}{S_1^2 - S^2} \quad \dots (43).$$

Ex. 24. Find the Increase in Area of Cross-sections due 1 side-long ground over ground considered as level across, whe the depths of a cutting, 20 feet wide at bottom, at the centr line are 0.0, 3.2, 6.1, 8.7, 11.1, 13.2, 14.6, 13.3, 9.8, 4.7, 0.0 feet, ever 50 feet apart; the transverse and side-slopes being 6 to 1 an $1\frac{1}{2}$ to 1, respectively. (See Fig. 14, p. 146.) From Eqn. 43, p. 131, v have :—

$$\text{when } d=0, \quad I = \frac{S(\frac{1}{2}b + 8d)^2}{S_c^2 - S^2} = \frac{1.5(10)^2}{36 - 2.25} = 4.44 \text{ sq. ft.}$$

$$,, \quad d=3.2', \quad I = \quad = \frac{1.5(10 + 3.2 \times 1.5)^2}{36 - 2.25} = 9.735 \text{ sq. ft.}$$

$$,, \quad d=6.1', \quad I = \quad = \frac{1.5(10 + 6.1 \times 1.5)^2}{36 - 2.25} = 16.298 \text{ sq. ft.}$$

Similarly, when $d=8.7'$, $I=23.613$ sq. ft. | when $d=14.6'$, $I=45.227$ sq. ft.

$$,, \quad d=11.1', \quad I=31.565 \quad ,, \quad d=13.3', \quad I=39.866 \quad ,,$$

$$,, \quad d=13.2', \quad I=39.468 \quad ,, \quad d=9.8', \quad I=27.115 \quad ,,$$

$$,, \quad d=4.7', \quad I=12.92 \quad ,,$$

27. Calculation of Areas of the Two Divisions of Cross-section of Earthwork when the Ground intersect the Base (Fig. 9).—Here $CN = A_1L = h_r$, $OA = (OA_1 - AA_1)$, $CD = EB_1 = h_l$; $OB = (B_1O - BB_1)$.

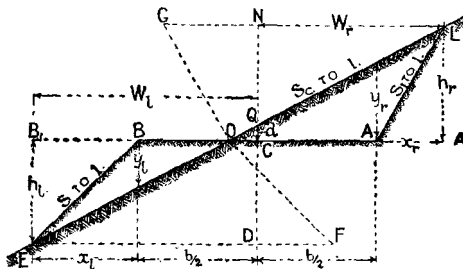


Fig. 9.—Cross-section of a Road along a Hill-side when the Cross-slope intersects the Base.

(a) Area of the Larger $\triangle OAL$ in cutting (q.v., Art. 1.

$$\text{p. 7.}) = \triangle OA_1L - \triangle A_1AL = \frac{1}{2} (OA_1 \times CN - AA_1 \times CN)$$

$$= \frac{1}{2} h_r \times OA = \left\{ dS_c + \frac{b}{2} \right\}^2 / 2 (S_c - S_1) \quad \dots \quad (44)$$

(b) Area of the Smaller $\triangle$ in bank $OBE = \frac{1}{2} OB \times h_l$

$$= (\frac{1}{2}b - dS_c)^2 / 2 (S_c - S) \quad \dots \quad \dots \quad (45)$$

When Q, C, O coincide, the $\triangle$ s will be equal, and $d=0$ zero), and $OA=OB$.

Ex. 25. Take Ex. 7, p. 8, $OA=12'$, $OB=8'$, $h=8'$, $h_1=8'$.

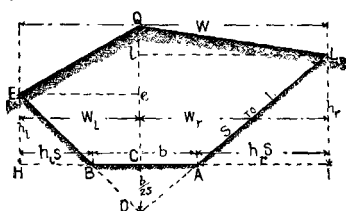
(a) Area of Earthwork in Cut, $\triangle OAL=\frac{1}{2} \times 8 \times 12=48$ sq. ft.

(b) " " " " Bank, $\triangle OBE=\frac{1}{2} \times 8 \times 8=32$ " "

From Table II, p. 69, find the Area of Earthwork in Cut, $\triangle OAL$, for height of $h_1=8'$ and combined slope-ratio $(S_1-S)=(2-\frac{1}{2})=1\frac{1}{2}$ to be 48 sq. ft.

From Table II, p. 69, find the Area of Earthwork in Bank, $\triangle OBE$, for heights $h_1=8'$ and combined slope-ratio $(2-1)=1$ to be 32 sq. ft.

28. Find the Area of a Three-level Section with two upper Warped Surfaces.—Let ABEQL be the Cross-Section and



W_L and W_r (Fig. 10) be the distances-out or side-widths on the left and right, and h_L , h_r , the side-heights above (in case of cut) or below (in case of fill) grade of left

and right slope segments respectively; $W=W_L+W_r$, $d=CQ$ =centre-height, S =the slope-ratio, b =width of bed. Then the area ABEQL is equal to the sum of the $\triangle$ s DLQ and DEQ minus the $\triangle$ ABD. Here $CD=b/2S$ and $DQ=(d+b/2S)$.

$$\therefore A = \left(d + \frac{b}{2S} \right) \frac{W}{2} - \frac{b^2}{4S} \quad \dots \quad \dots \quad (46).$$

This formula will give mathematically correct results; but for practical purposes approximate slopes of EQ and QL may be determined. We know h_L and h_r ; deduct these from d , the centre-height; and we get Qe and Ql . We know W_L and W_r , being equal to $h_L S + b/2$ and $h_r S + b/2$ respectively. Then from Table II, and (knowing the slopes ED and EQ) the area of $\triangle EQD$ and which add area of $\triangle QDL$, similarly found. Deduct from the combined result the area of $\triangle BAD$ of height $b/2S$, and side-slopes to 1.

Note that in the above formula $b^2/4S$ is constant for the same width of bed and side-slopes.

Where $x_1, y_1; x_2, y_2; x_3, y_3; x_4, y_4$; etc., are the co-ordinates of the angular points, co-ordinates are to be taken with their proper algebraical signs, East departures and North latitudes being +, South latitudes and West departures -; y co-ordinates = latitudes and x co-ordinates departures.

By substituting the figures of the rectangular co-ordinates in Fig. 11, we get the Area of the quadrilateral AQJL

$$= \frac{1}{2} \left\{ \left(\frac{b}{2} + W_r \right) (h_r - o) + (W_r + w_r) (r - h_r) + (w_r + o) (d - r) + (o + \frac{b}{2}) (o - d) \right\} = \frac{1}{2} \left\{ (w_r - \frac{b}{2}) (d - h_r) + W_r r \right\}$$

$$\text{Similarly the Area of QBEF} = \frac{1}{2} \left\{ (w_l - \frac{b}{2}) (d - h_l) + W_l l \right\};$$

$$\therefore \text{The Total Sectional Area} = A = \frac{1}{2} \left\{ (w_r - \frac{b}{2}) (d - h_r) + W_r r + W_l l + b d + (w_l - \frac{b}{2}) (d - h_l) \right\} \dots \quad (48).$$

If the points J and F are just vertically over A and B; and if the center and extreme heights are the same, then the first and last terms disappear, and in either case the equation becomes:

$$A = \frac{1}{2} \{ W_r r + W_l l + b d \} \dots \dots \dots (49).$$

From Tables the area of the section is obtained thus: First find the areas of the 4 trapezoids and then deduct the two $\triangle r$ slope portions below.

Ex. 27. Find the Areas of Cross-sections from the following Field-notes, the width of bed being 20', side-slopes 1½ to 1.

Section 1:	...	$\frac{25.75}{+10.5}$	$\frac{13}{+10}$	$\frac{0}{+16.5}$	$\frac{18}{+19}$	$\frac{40}{+20}$
Section 2:	...	$\frac{24.25}{+9.5}$	$\frac{10.5}{+10}$	$\frac{0}{+12.5}$	$\frac{16.5}{+17.5}$	$\frac{37.75}{+18.5}$

This is a problem of the same kind as in Example 26 with the intermediate heights and their distances-out added.

By substituting the figures in the field-notes in Formula (48) above, we get

$$\text{Area of Sec. 1} = \frac{1}{2} \left\{ (18.0 - 10) (16.5 - 20) + 40 \times 19 + 25.75 \times 10 + 20 \times 16.5 + (13 - 10) (16.5 - 10.5) \right\} = 668.75 \text{ sq. ft.}$$

$$\text{Area of Sec. 2} = \frac{1}{2} \left\{ 16.5 - 10) (12.5 - 18.5) + 37.75 \times 17.5 + 24.25 \times 10 + 20 \times 12.5 + (10.5 - 10) (12.5 - 9.5) \right\} = 557.56 \text{ sq. ft.}$$

The areas may be found with the aid of the Table II as under :—Take Section I ; thus we have

Area of Trapezoids.					Area of Δ S.			Net Area of Section 1.
Station.	Depth.	Mean depth.	Distances, width.	Area from Table I.	Side Slope 1 $\frac{1}{2}$: 1.	Depth.	Area.	
H or E 0	10.5							
F	10.0	10.25	12.75	130.69	HBE	10.5	82.69	
C Q	16.5	13.25	13.00	172.25	ALK	20.0	300.00	
J	19.0	17.75	18.00	319.50				
K or L	20.0	19.50	22.00	429.00				
Total Area ...						=	382.69	668.75 s.ft.

Similarly the other sectional area may be found from Tables easily.

If one end-area is a five-level section and the next a three-level section, the included prismoid is computed as a five-level prismoid, one of the inside distance-out and its height being each equal to 0.

30. Use of the Planimeter in Heavy Work, i.e., for large cuts and fills with Irregular Ground.—It may be necessary to take the level and distances-out of other points on the cross-section in order to better determine its area. These are taken by simply reading on the staff at the critical points on the line of cross-section and measuring the distances-out from the centre. The points can then be plotted on cross-section paper and joined by curved or straight lines. Then it would be well to find the area by the planimeter. The construction and use of this instrument have been described in Author's "Manual of Surveying" and need not be detailed here.

Chapter V.—Calculation of Cubic Contents of Earthwork.

31. Finding the Cubic Contents of Earthwork.—With the areas of cross-sections obtained, as shown in pp. 129-136, and the distances between them known, the contents of required embankments or cuts can be ascertained by the following methods :—

- (1) By Averaging End Areas ;
- (2) By Middle Areas ;
- (3) By the Prismoidal Formula (the same as Shubhan-
kar's Rule for Tank Earthwork) ;
- (4) By Adding up the Cubic Contents of Longitudinal
Layers at certain critical intervals ;
- (5) Estimate by Means of Contours ;

(6) **By dividing up the Prismoid into six component Pyramids, and then finding the total value of those component Pyramids.**

The first two methods consist in taking a number of equidistant cross-sections and calculating the cubic contents between each pair, either by finding the mean depth between two pegs and then finding the area of a cross-section of the cut or fill of that depth and to multiply by the length between the pegs for content, or else by taking a cross-section at the middle point between each pair and multiplying its area by the same length.

Whatever may be the shape of the mass of earth intercepted between two parallel cross-sections it may be divided into prisms, pyramids, wedges or frustums of pyramids to all which, and therefore to the entire mass, the prismoidal formula may be correctly applied.

32. 1st Method.—Calculation by Average End Areas.—

When the end areas are *nearly equal*, not otherwise, the formula used for cubic content may be: $V = \frac{A_1 + A_2}{2} \times L$.. (49).

Where L is the length of the portion of earthwork of which the volume V is required, and A_1 and A_2 areas of two cross-sections at the ends. In estimating for a long line of road such a proceeding would be very laborious. If the sections are given at equal distances apart for an *even* number of pegs, the following formula may be deduced:—Let A_1, A_2, A_3 , etc., A_n be the areas of cross-sections at successive pegs the distances between being always $100' = L$.

Let $V_1 = \frac{1}{2}(A_1 + A_2)L$; $V_2 = \frac{1}{2}(A_2 + A_3)L$; etc., etc.; $V_{n-1} = \frac{A_{n-1} + A_n}{2} \times L$; and let $V = V_1 + V_2 + V_3 + \text{etc.} + V_{n-1}$;

then by adding $V = L \left\{ \frac{1}{2}(A_1 + A_2) + \frac{1}{2}(A_2 + A_3) + \frac{1}{2}(A_3 + A_4) + \text{etc.} + \frac{1}{2}(A_{n-1} + A_n) \right\} = L \left\{ \frac{1}{2}(A_1 + A_n) + A_2 + A_3 + A_4 + \text{etc.} \right\} \dots$ (50).

This formula is applicable at all times, when an approximate quantity of a cutting or embankment is quickly required; but it should be borne in mind that in the case of constantly shifting gradients or naturally uneven ground the formula might give very inaccurate results.

From the demonstration of the prismoidal formula it will be seen that the prismoid consists of: (i) the middle portion of frustum of a wedge, *i.e.*, a Δ prism, and (ii) the side portions consisting of frustums of pyramids. The content of the former is correctly

obtained by multiplying the sum of the bases or end-areas by *one-half* the length ; but to find the content of the frustum of a pyramid their bases are to be multiplied by *one-third* of their length.

In the method of calculation by averaging the end-areas we multiply the sum of the end-areas, which is composed of the prisms and pyramids, by one-half the length ; and hence, this method gives a result too large by the difference between a half and a third, *i.e.*, by a sixth of the product of the bases of the pyramids by their length, *i.e.*, the error in excess is

$$Sl \left\{ \frac{1}{2} (H^2 + h^2) - \frac{1}{3} (H^2 + Hh + h^2) \right\} = \frac{1}{6} lS (H - h)^2. \quad \dots (51).$$

If this be calculated for each mass, and subtracted from the results obtained by averaging end-areas, the remainder will equal the result obtained by the correct prismoidal formula, as in Table Ex. 28 II., p. 143.

The value of $\frac{1}{6} lS (H - h)^2$ can be obtained from Tables II and III, contents for slopes, by taking $\frac{1}{3}$ of the quantities for their respective difference in height and slope, of course, taking $l=100'$.

33. 2nd Method.—Calculation by the Middle Areas.—

In this method the *middle area* of each prismoidal mass is deduced from the middle or average height, *i.e.*, the arithmetic mean of the extreme heights, and is multiplied by the length. The results thus obtained are too small, their deficiency being equal to just half the excess of the first method. The contents of the prisms (middle portions) are correctly given, but that the deficiency is in the pyramids. Calling their average or middle heights $\frac{1}{2} (H + h)$, their middle side-widths equal $S \frac{1}{2} (H + h)$; their middle areas $\frac{1}{4} S (H + h)^2$; the contents of one of them $\frac{1}{6} Sl (H + h)^2$; and of the two $\frac{1}{3} Sl (H + h)^2$; but the content of the pyramids is $\frac{1}{6} Sl (H^2 + Hh + h^2)$. Hence the deficiency of the method of middle areas is the difference between a third and a fourth, *i.e.*, a $\frac{1}{12}$ of the product of the bases of the pyramids by their length, or

$$Sl \left\{ \frac{H^2 + Hh + h^2}{3} - \frac{(H + h)^2}{4} \right\} = Sl \frac{(H - h)^2}{12}. \quad \dots (52).$$

The corrections which are half that of the method of averaging end-areas, thus calculated and added to the above results would agree with the true ones given by the *prismoidal formula*. The value of $\frac{1}{12} Sl (H - h)^2$ can be obtained from the Tables II and III of slopes by taking $\frac{1}{3}$ of the quantities for the respective difference in height and slope. See application in Col. *correction* in Ex. 28 III, p. 143.

• **34. 3rd Method.**—The *Prismoid* is a solid having parallel end-areas, and may be composed of any combination of prisms, cylinders, wedges, pyramids, or cones or frustums of the same, whose apices and bases lie in the end-areas.

The Prismoidal Formula.—Let A_1, A_m, A_2 = the end and middle areas of a prismoid, or of any its elementary solids; A = area of the base of a prism, wedge, or pyramid; h = altitude of the prismoid or elementary solid. Then we have

$$\text{For Prisms, } V = hA = \frac{1}{3}h(A_1 + 4A_m + A_2) \quad \dots (53).$$

$$\text{„ Wedges, } V = \frac{1}{2}hA = \frac{1}{3}h(A_1 + 4A_m + A_2) \quad \dots (54).$$

$$\text{„ Pyramids, } V = \frac{1}{3}hA = \frac{1}{3}h(A_1 + 4A_m + A_2) \quad \dots (55).$$

When for any combination of these, having all the common altitude h we have the following rigid formula for all prismoids

$$V = \frac{1}{3}h(A_1 + 4A_m + A_2) \quad \dots \dots (56).$$

which is known as the *Prismoidal formula*, i.e., the *Shubhankar's Rule for Tank Earthwork*. This can be applied to any solid of the form of a prismoid.

35. Demonstration of the Shubankar's Rule, i.e., The Prismoidal Formula.—Let ABCDEFGI (Fig. 12) represent a tapering prismoidal excavation of unequal cross-sections at its two ends, ABCD and EFGI. Call the height of the lesser end h ; of the greater end H ; the breadth of base, b ; the side-slope ratio is S , and the length l . Then by extending the bottom surface ABGI and the top surface CDFE to meet at the line LM we have

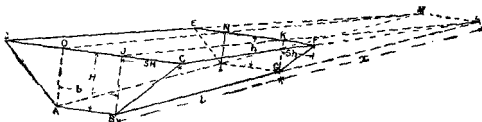


Fig. 12.—To Find the Cubic Content of a Prismoid.

$$l+x:x::H:h; \therefore lh+hx=xH; \text{ and } x=\frac{lh}{H-h}; \therefore l+x=\frac{lH}{H-h};$$

and the Volume of Two Pyramids, on bases AOD and BJC at the sides = $\frac{1}{3}SH^2(l+x)$, by using the values of $l+x$ and x ,

$$\text{we have the Volume of their Frustums} = \frac{SH^2}{3}(l+x) - SH^2 \frac{x}{3} = \frac{SH^2}{3} \left(\frac{lH}{H-h} \right) - \frac{SH^2}{3} \left(\frac{lh}{H-h} \right) = \frac{1}{3}S \left(\frac{H^3 - h^3}{H-h} \right) = \frac{1}{3}(H^3 + Hh + h^3) \quad (57).$$

$$\text{The Volume of Middle Portion on base AOJB} = \frac{(H+h)}{2}lh, \quad (58).$$

∴ By adding (57) and (58) we have the Total

$$\text{Volume of Prismoid} = l \left\{ \frac{(H+h)}{2} b + \frac{S}{3} (H^2 + Hh + h^2) \right\} \quad (59).$$

$$= \frac{l}{6} \left\{ 3b(H+h) + 2S(H^2 + Hh + h^2) \right\} \quad (60).$$

$$= \frac{l}{6} \left\{ bh + Sh^2 + bH + SH^2 + 2bH + 2bh + 2SHh + SH^2 + Sh^2 \right\} \quad (61).$$

The first two terms express the area of the smaller end of the prismoid, the next two the area of the larger end. The remaining 5 terms may be reduced to

$$4 \left(\frac{b(H+h)}{2} + S \frac{(H+h)^2}{4} \right) = 4 \left[\frac{H+h}{2} \times \left(b + S \cdot \frac{H+h}{2} \right) \right],$$

which is the expression for 4 times the middle area, thus deducing the *Prismoidal Formula*.

Equation (60) may be transformed into the following, either of which is more convenient for calculation than the usual prismoidal formula:—

$$\frac{1}{6} [2s (H-h)^2 + 3b (H+h) + 6 SHh] \quad \dots (62).$$

or
$$\frac{1}{6} [2s (H+h)^2 + 3b (H+h) - 2 SHh] \quad \dots (63).$$

The area of the middle section is never the mean of the two end areas if the prismoid contains any pyramids or cones among its elementary forms. When the 3 sections are similar in form, the *dimensions* of the middle area are always the means of the corresponding end dimensions. This fact often enables the dimensions, and hence the area of the middle section to be computed from the end areas. Where this cannot be done, the middle section must be measured on the ground, or else alternate section where they are equally spaced, is taken as the middle section, and the length of the prismoid taken as twice the distance between cross-sections.

For any two adjoining areas we have by the prismoidal formula as well as by Simpson's 3rd Rule, $V_{1-3} = \frac{l}{3} (A_1 + 4A_2 + A_3)$... (64).

where l is the common distance between the projected areas. For the next two sections we have similarly, $V_{3-5} = \frac{l}{3} (A_3 + 4A_4 + A_5)$... (65).

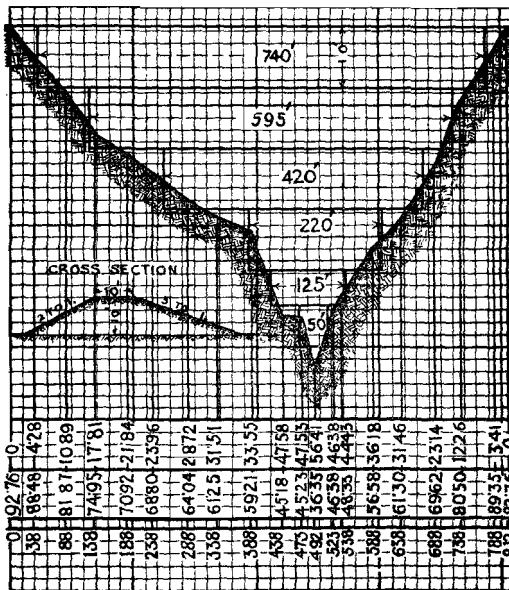
For a continuous line of earthwork and for any odd number of sections and even number of prismoidal masses we have in cubic feet:

$$V = \frac{l}{3} (A_1 + 4A_2 + 2A_3 + 4A_4 + 2A_5 + 4A_6 + \dots + A_n) \quad \dots (66).$$

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where l is the distance between sections in feet; n is an odd number, A being in square feet. Here the assumption is made that the volume lying between alternate sections conforms sufficiently near to the prismatic forms.

36. 4th Method.—By Adding up the Cubic Contents of Longitudinal Layers at equal or unequal vertical intervals



Reduced Level of Datum = 10'.

Scale—Vertical.—20' = 1";

Scale—Horizontal.—200' = 1".

Fig. 13.—Longitudinal Section of a Tank Bund, *i.e.*, of a Dam Across a Stream, when it is desired to find the cubic contents of a bank or cut carried over ground having a longitudinal section as indicated in Fig. 13, with Cross-slope Level. To find the contents in the ordinary

way preparation and calculation of areas of several cross-sections at specified distances apart would be required, and then to work out the cubic contents by the previous methods of tedious calculations. In this method all that is necessary is to draw a series of lines 1 foot or more apart parallel to the top of the bank or bottom of cut and to obtain from the scale of the section the length of each horizontal layer.

Ex. 28.—An Existing Tank Embankment has a top-width of 10 feet with a front side-slope of 3 to 1, and a rear side-slope of 2 to 1, i.e., $S+S'=5$; and the longitudinal section of the bank is as given in Fig. 13. The ground is level in a direction across the bank. Find the cubic contents of the bund.

(I). Calculation of the Cubic Contents of the Embankment by Averaging end Areas by ordinary calculation (Fig. 13):—

Cross Section at	Area of Cross-sections in sq. ft.		Mean Area in sq. ft.	Length.	Cubic Contents in Cubic Feet.
0	0*	0·0			
38	$\frac{1}{2}(10 + 31'40) \times 4'28$	88'596	44'298	38	1683'324
68	$\frac{1}{2}(10 + 64'45) \times 10'89$	405'380	246'988	50	12349'400
138	$\frac{1}{2}(10 + 99'05) \times 17'81$	971'090	688'235	50	34411'750
188	$\frac{1}{2}(10 + 119'20) \times 21'84$	1410'864	1190'977	50	59548'850
238	$\frac{1}{2}(10 + 129'80) \times 23'96$	1674'804	1542'834	50	77141'700
288	$\frac{1}{2}(10 + 153'60) \times 28'72$	2349'296	2012'050	50	100602'500
338	$\frac{1}{2}(10 + 167'55) \times 31'51$	2797'300	2573'298	50	128664'900
388	$\frac{1}{2}(10 + 177'75) \times 33'55$	3149'606	2973'403	50	148670'150
438	$\frac{1}{2}(10 + 247'90) \times 47'58$	6135'441	4642'473	50	232123'650
473	$\frac{1}{2}(10 + 247'65) \times 47'53$	6123'052	6129'246	35	214523'610
492	$\frac{1}{2}(10 + 292'05) \times 56'41$	8519'320	7321'186	19	139102'534
523	$\frac{1}{2}(10 + 241'90) \times 46'38$	5841'561	7180'440	31	222593'640
538	$\frac{1}{2}(10 + 232'15) \times 44'43$	5379'362	5610'461	15	84156'915
568	$\frac{1}{2}(10 + 190'90) \times 36'18$	3634'281	4506'821	50	225341'050
638	$\frac{1}{2}(10 + 167'30) \times 31'46$	2788'929	3211'605	50	160580'250
688	$\frac{1}{2}(10 + 125'70) \times 23'14$	1570'049	2179'489	50	108974'450
738	$\frac{1}{2}(10 + 71'30) \times 12'26$	498'369	1034'209	50	51710'450
788	$\frac{1}{2}(10 + 27'05) \times 3'41$	63'170	280'769	50	14038'450
812	0	0·0	31'685	24	758'640
TOTAL =					20,16,973'613

* Note.—In the above table, 30'40, 64'45, 99'05 and the rest of the figures below them are the bottom-widths in feet of the respective cross-sections. In the cross-section at 38, the height of bank is 4'28', the side slopes being 2 : 1 and 3 : 1, the bottom width equal $10' + 5 \times 4'28 = 10' + 21'40 = 31'40$. Similarly others are found. Hence the area of cross-section at 38' = $\frac{1}{2}(10 + 31'40) \times 4'28 = 88'596$ sq. ft. The areas of cross-sections at other stations are found in the same way. The mean area is found as follows: The areas at 0 and at 38 being 0 and 88'596, their mean is $\frac{1}{2}(0 + 88'596) = 44'298$ sq. feet. This multiplied by the distance (here 38') between the cross-sections gives 1683'324 cu. ft. as the cubic content, so on for the rest.

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Ex. 28II.—Calculation of Cubic Contents of the Embankment by Averaging End Areas with the Aid of Tables I, II & III (Fig. 13).

Distance in feet.	Depth of Bank in ft.	Area of Middle Portions, Sq. ft.	Area of Slope Portions, Sq. ft.	Total Area, Sq. ft.	Average Area, Sq. ft.	Length in feet.	Cubic Contents, Cu. ft.	Correction, Minus.	Corrected Cubic Contents, Cu. ft.
0	0	0	0	0	0	0	0	0	0
38	4-28	42-8	45-80	88-60	44-30	38	1683	290+	1393
88	10-89	108-9	268-48	405-38	240-69	50	12349	910	11439
138	17-81	178-1	792-99	971-09	888-23	50	34412	998	33414
188	21-84	218-4	1192-46	1410-86	1190-97	50	59549	338	59210
238	23-96	239-6	1435-20	1674-80	1542-83	50	77142	94	77048
288	28-72	287-2	2062-10	2349-30	2012-05	50	100602	472	100130
338	31-51	315-1	2482-20	2797-30	2573-30	50	128665	162	128503
388	33-55	335-5	2814-01	3149-51	2973-40	50	148670	87	148583
438	47-58*	475-8	5659-64	6135-44	4642-47	50	232124	4101	228023
473	47-53	475-8	5647-75	6123-05	6123-24	35	214524	0	214524
492	56-41	564-1	7955-22	8519-32	7321-18	19	139102	624	138478
523	46-38	463-8	5377-76	5841-56	7180-44	31	222593	1300	221294
538	44-43	444-3	4935-06	5379-36	5610-46	15	84157	24	84133
588	36-18*	361-8	3272-48	3634-28	4506-82	50	225341	1418	223923
638	31-46	314-6	2474-33	2788-93	3211-60	50	160580	464	160116
688	23-14	231-4	1338-65	1570-05	2179-49	50	108974	1442	107532
738	12-26	122-6	375-77	498-37	1034-21	50	51710	2466	49244
788	3-41	34-1	29-07	63-17	290-77	50	14038	1632	12406
812	0	0	0	0	31-58	24	758	116	642

† Taking $S = \frac{1}{2}(3+2) = 2\frac{1}{2}$ from Eqn. 51, p. 138. Total = 20,16,972 16,938 20,003

Ex. 28III.—Calculation of Cubic Contents of the Embankment by Middle Areas with the Aid of Tables I, II & III (Fig. 13).

Distance in feet.	Depth of Bank in ft.	Middle Depth in ft.	MIDDLE AREA Sq. ft.			Length in feet.	Cubic Contents, Cu. ft.	Correction, Plus.	Corrected Cubic Contents, Cu. ft.
			Middle Portion.	Slope Portions.	Total Area.				
0	0	0	0	0	0	0	0	0	0
38	4-28	2-14	21-40	11-45	32-85	38	1248	145+	1393
88	10-89	7-585	75-85	143-83	219-68	50	10984	455	11439
138	17-81	14-35	143-50	514-81	658-31	50	32915	499	33414
188	21-84	19-625	198-25	982-57	1180-82	50	59041	189	59210
238	23-96	22-90	229-00	1311-02	1540-02	50	77001	47	77048
288	28-72	26-34	283-40	1734-50	1997-90	50	99895	236	100130
338	31-51	30-115	301-15	2267-28	2568-43	50	128421	81	128503
388	33-55	32-53	325-30	2645-60	2970-80	50	148340	43	148583
438	47-58*	40-665	405-65	4113-79	4519-44	50	225972	2050	228023
473	47-53	47-555	475-55	5653-69	6129-24	35	214523	0	214524
492	56-41	51-97	519-70	8752-20	7271-90	19	138166	312	138478
523	46-38	57-395	513-95	6603-61	7117-56	31	220644	650	221294
538	44-43	45-405	454-05	5154-03	5808-08	15	84121	12	84133
588	36-18*	40-305	403-05	4061-23	4464-28	50	223214	706	223923
638	31-46	33-82	338-20	2850-48	3197-68	50	158384	232	160116
688	23-14	27-39	273-00	1863-22	2136-22	50	106811	721	107532
738	12-26	17-70	177-06	783-22	960-22	50	48011	1233	49244
788	3-41	7-835	78-35	153-47	231-82	50	11591	816	12406
812	0	1-705	17-05	7-27	24-32	24	584	58	642

† Taking $S = \frac{1}{2}(2+2) = 2\frac{1}{2}$. Total = 19,91,566 8,468 20,000

* Areas for depths above 34-00 ft. are calculated in the manner shown in Examples 12-17, Art. 23 on p. 53, and marked by * therein.

Ex. 28IV.—Calculation of Cubic Contents of the Embankment by the Prismoidal Formula with the Aid of Tables I, II & III (Fig. 19).

AREAS OF CROSS-SECTIONS IN SQUARE FEET.										Mean Area of Cross-section $A = \frac{1}{3}(A_1 + 4A_m + A_2)$ Sq. ft.	Length, feet.	Cubic Contents in Cu. ft.
DEPTH OF SECTIONS IN FEET.			A ₁		A _m		A ₂					
A ₁	A _m	A ₂	Mid. Portion	Slope Portions.	Total Area.	Mid. Portion.	Slope Portions.	Total Area.				
0-38	0-0	2-14	4-28	0-0	0-0	21-40	11-45	38-85	131-40	88-60	1393	
38-68	4-28	7-38	10-89	42-8	45-80	88-60	75-85	143-83	219-68	878-72	11439	
98-138	10-89	14-35	17-81	108-9	296-48	405-38	143-50	514-91	659-31	2633-24	33414	
138-188	17-81	19-82	21-84	178-1	792-96	971-09	198-25	982-57	1180-82	4723-28	59210	
188-238	21-84	22-90	23-96	218-4	1192-46	1410-86	229-00	1311-02	1540-02	6160-08	77048	
238-288	23-96	26-34	28-72	239-6	1435-20	1674-80	263-40	1734-50	1907-90	7301-60	100131	
288-338	28-72	30-11	31-51	287-2	2062-10	2349-80	301-15	2297-28	2568-43	10273-72	128503	
338-388	31-51	32-53	33-55	315-1	2482-20	2797-80	325-30	2945-50	2970-80	11883-20	148583	
388-438	33-55	40-57	47-58	335-6	2814-01	3149-51	405-65	4113-39	4519-44	18077-78	229022	
438-473	47-58*	47-55	47-53	475-8	5659-64*	6135-44	475-55	5653-59	6129-24	24516-96	214523	
473-492	47-53	51-97	56-41	475-3	5647-75	6123-05	519-70	6732-20	7291-90	29087-60	138478	
492-523	56-41*	61-40	66-38	564-1	7955-22*	8519-32	513-95	6603-61	7117-56	28470-24	221294	
523-538	46-38	45-40	44-43	463-8	5577-76	5841-56	454-05	5154-03	5698-08	24432-32	184133	
538-568	44-43*	40-31	36-18	444-3	4635-06*	5379-36	403-05	4061-23	4464-28	17857-12	223623	
568-638	36-18	33-82	31-46	361-8	3272-48	3634-28	338-20	2859-48	3197-08	12790-72	160116	
638-688	31-46	27-80	23-14	314-6	2474-33	2783-93	273-00	1863-22	2136-22	8544-88	107532	
688-738	23-14	17-70	12-26	234-6	1838-65	1570-05	177-00	783-22	960-22	3840-88	49244	
738-788	12-26	7-83	3-41	122-6	375-77	498-37	78-35	133-47	231-82	927-28	12406	
788-812	3-41	1-70	.....	34-1	29-07	63-17	17-05	7-27	24-32	97-28	642	
Total =											20,00,084	

* Areas for depths above 34 ft. are calculated in the manner shown in Examples 13-17 under Art. 23 on p. 53, and marked by * therein.

* Areas for depths above 34 ft. are calculated in the manner shown in Examples 13-17 under Art. 23 on p. 53, and marked by * therein.

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Ex. 28 V. Calculation of Cubic Contents of the Embankment by Adding up Cubic Contents of Longitudinal Layers at Certain Vertical Intervals with the Aid of Tables I, II & III (Fig. 13).

Layers.	Depth, Feet.	Area, Square Feet.		Total Area Sq. Feet.	Area of each Layer in Sq. Feet.	Length, Feet.	Cubic Contents in Cu. Feet.
		Middle portions.	Two Slope portions.				
1st	10	100	250	350	350	740	259000
2nd	20	200	1000	1200	850	595	505750
3rd	30	300	2250	2550	1350	420	567000
4th	40	400	4000	4400	1850	220	407000
5th	46	460	5290	5750	1350	125	168750
6th	52	520	8760	7280	1530	50	76500
7th	56.41	564.1	7955.22*	8519.32	1239.32	12.9	15937
* Calculated in the manner shown in Ex. 15, p. 53. Total =							19,99,987

When the top of a bank or the bottom of a cut has a gradient, or longitudinal slope, the lines dividing the longitudinal section into layers should be parallel to the top of the bank, or the bottom of the cut, or according to the lift the earthwork will be paid for, say, 3 or 5 feet apart. A cut, being a bank turned upside down, its contents can be obtained in like manner estimating in this case from the bottom upwards. *The least labor involved in this example is apparent.*

37. Application of Check on Borrow Pit Measurements.

—When the cubic contents of a bank is obtained as in the Calculation Table Ex. 28 V, it becomes very easy to ascertain the progress of the field-work thus: with bank finished to the top of the lowest layer the amount of earthwork done is obviously 15,987 cu. ft.; with bank done up to the top of the sixth layer it is 92,487 cu. ft.; with it completed up to top of fifth layer 261,237 cu. ft.; and so on.

38. Calculation of Earthwork when the Transverse-Slope of Ground is passed over.—Except in the case of hill-roads, it is the practice to neglect the side-long slope of the ground where the slope of the ground passed over at right angles to the centre lines of bank or cutting is *uniform and gradual*, and to compute the contents on the supposition that the area of any cross-section on side-long ground does not differ from the area of a similar section on ground level across. The object of this is to avoid tedious calculations. When, however, the cross-slope is *uniform*, but at the same time very *considerable and irregular*, as in the case of a bank carried across a *swell*, or in case of embankment or cut for a road or a railway carried

along a hill-side, with a uniform but rapid fall, it will be necessary to minimise calculation, to find the depth of equivalent level bank by methods shown in Arts. 11 and 12, pp. 4, 5, and the area computed, or by the methods in Arts. 39, Ex. 29 iii, pp. 147-148, to arrive at a closer approximation of the content of a cutting.

39. In Estimating the Earthwork for a Road or a allway with Innumerable Varying Gradients carried in bank and cut over non-undulating or undulating ground computation of earthwork has to be made for each gradient separately as

shown in Arts. 36, Ex. 28 V, p. 145, and in Ex. 29, iii, p. 148, and then summed up for the whole length of road, or Railway.

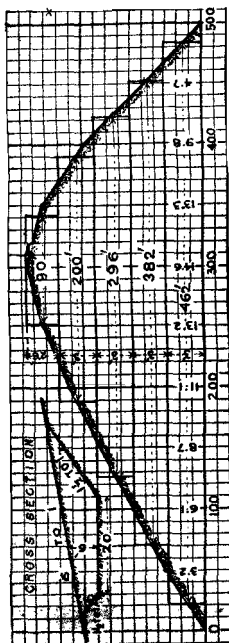


Fig. 14.—Longitudinal Section of a Cutting across a Hill-spur having a Side-long Top Slope.—
To Calculate the Cubic Contents of a Cutting on Side-long Ground.

Ex. 29. Calculate the Cubic Contents of a Cutting 500' long, 20' wide at bottom, with side-slopes $1\frac{1}{2}$ to 1. The transverse-slope of ground is 6 to 1, (Fig. 14). The depth of cutting at each 50' from the commencement is as given in Column 2 of the following Table.—(i) To apply Table II in the computation required find the side-heights, h , and h_1 at the deeper and shallower ends of the cutting (q.v., Fig. 8, p. 130). Then find the areas for depths h , and h_1 for the various sections with combined slope-ratios of $(6-1\frac{1}{2}) = 4.5$ and $6+1\frac{1}{2} = 7.5$ respectively. Then deduct from the former areas the latter areas to obtain the areas of the several cross-sections (q.v., Art. 25, Fourth Method). After this, calculations are made in accordance with the *Prismoidal formula*, known in Ancient Indian Mensuration as *Suwasakar's Rule* for Tank Earthwork.

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1	2	3	4	5	6	7	8	9	10
Dis- tances.	Centre Depths.	Side heights h_1 .	Side heights h_2 .	Area for height, h_1 , $S_1 - S =$ 4'5.	Area for depth, h_2 , $S_1 + S =$ 7'5.	Total Area of Cross- Section.	$A_1 + 4 \times$ $A_m + A_2$ 6	Length.	Cubic contents, c. ft.
0	0	2-222	.....	11-09	.....	11-09	.....	...	...
50	3-2	6-489	1-227	94-71	5-62	89-09	93-59	100	9,359
100	6-1	10-355	3-547	241-25	47-18	194-07	...	...	...
150	8-7	13-822	5-627	429-85	118-73	311-12	312-81	100	31,281
200	11-1	17-022	7-547	651-93	213-59	438-34	...	...	...
250	13-2	19-822	9-227	884-05	319-25	564-80	559-06	100	55,906
300	14-6	21-689	10-347	1058-33	401-47	656-86	...	...	...
350	13-3	19-955	9-307	895-95	324-83	571-12	551-40	100	55,140
400	9-8	15-289	6-507	525-88	158-78	367-10	...	...	...
450	4-7	8-489	2-427	162-11	22-08	140-03	156-72	100	15,672
500	0	2-222	.....	11-09	..	11-09	.....	...	...
Total =									167,358

* NOTE.—That in cutting h_1 equals h_2 in embankment, and *vice versa*.

Ex. 29 (ii). Find the Cubic Contents of the Cutting in Ex. 29 with the cross-slope neglected by the Prismoidal formula :—

Distances.	Centre Depths.	Area, Sq. Feet.			A_1 .	4 A_m .	A_2 .	$A_1 +$ 4 $A_m +$ A_2 6	Length.	Cubic con- tents, c. ft.
		Middle Por- tions.	Two Slope Portions.	Total Area.						
					in Square Feet.					
0	0-0	80	0-0	0-0	.....	.....	.....	.....	...	...
50	3-2	64	15-36	79-36	.....	317-44	177-81	82-54	100	8,254
100	6-1	122	55-81	177-81	.....	.....	.....	.....	...	...
150	8-7	174	113-51	287-51	177-81	1150-04	406-81	289-11	100	28,911
200	11-1	222	184-81	406-81	.....	.....	.....	.....	...	...
250	13-2	264	261-36	525-36	406-81	2101-44	611-74	519-99	100	51,999
300	14-6	292	319-74	611-74	.....	.....	.....	.....	...	...
350	13-3	266	265-33	531-33	611-74	2089-32	340-06	512-85	100	51,285
400	9-8	196	144-06	340-06	.....	.....	.....	.....	...	...
450	4-7	94	33-13	127-13	340-06	508-52	0	141-43	100	14,143
500	0	0	...	0	.....	.....	.....	.....	...	...
Total =									154,592	

Thus neglecting cross-slopes there is a difference of 12,766 cu. ft. less; but the less labour involved in calculation is apparent. But the least laborious method will be to work out the areas as for level ground and then to add to them the increase of area due to transverse-slope as shown in Ex. 24, p. 132, and to find the cubic contents by the prismoidal formula or by method of adding longitudinal layers as is shown below.

Ex. 29 (iii). Find the Cubic Contents of the Cutting in Ex. 29 by the method of adding the contents of longitudinal layers :—To obtain the desired result proceed as for a bank on ground level across (Art. 36, Ex. 28 v, p. 145) to find the areas of the middle and slopes of cross-sections. Then find the increased area due to side-long ground (Art. 26, Ex. 24, p. 132), and finally add the areas for the different depths to which the Longitudinal Section is divided. In the present case it is divided at 3 ft. vertical intervals (Fig. 14).

The addition of the increased area affords means of computing the area of the layers with allowance due to the transverse-slope, and then to multiply them by the lengths of the layers scaled off from the plotted longitudinal section, to give the cubic contents, which in the present example exceeds by 32 cu. ft. only to that obtained by the Shuvankar's Rule (Art. 35, Ex. 29 (i), p. 147) and this is significant.

Layers.	Center Depths, Feet.	Area as if on Level Ground.		Increase of Area due to Side-long Ground, Sq. ft.	Total Area of Cross-section, Sq. ft.	Area of each Layer, Sq. ft.	Length, feet.	Cubic Contents, Cu. ft.
		Middle Portions.	Two Slope Portions					
1st	3.0	60	13.50	9.34	82.84	82.84	462	38,272
2nd	6.0	120	54.00	16.04	190.04	107.20	352	40,650
3rd	9.0	180	121.50	24.54	326.04	136.00	206	40,256
4th	12.0	240	216.00	34.84	490.84	164.80	200	32,960
5th	14.6	292	319.74	45.23	656.97	166.13	90	14,952
Total =								167,390

40. It is recommended that for small estimates amounting to Rs. 12,000, or Rs. 15,000 for an ordinary unmetalled District Road running across a side-long ground, of, say, 8 or 10 miles in length to include earthwork and bridging, the above method should be adopted, otherwise the Engineer will find that his 5 per cent. contingencies will be swallowed up by the excess earthwork (alone) to be done over his estimate made assuming the ground to be level across, necessitating its revision at an after date.

41. Application of Check on Progress of Field-work, when the contents, of a bank carried over, or of a cut through, side-long ground, are obtained by method shown in Art. 39, Ex. 29 (iii), above can be easily made at any time during the progress of work to avoid over-payment. With cut down to the top of the fourth layer the quantity of earth dug is obviously 14,952 cu. ft.; with cut completed down to the top of the third layer it is 47,912 cu. ft.; with it done to top of second layer 88,168 cu. ft.; and so on.

42. With the Transverse-slope at the Different Pegs varying considerably the actual area of each cross-section has to be obtained by one of the methods indicated in Arts. 25 and 26, pp. 130-131, separately before finding the contents.

43. Check of Measurement Book by the Accountant in Office from Table I.—The calculations of measured quantities by subordinates in the field can be checked in office with Table I.

44. 5th Method—Estimate by Means of Contours.—

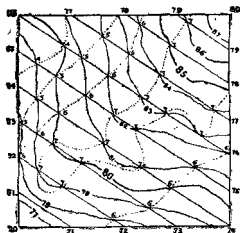


Fig. 15.—Estimate by Means of Contours.

(1) The amount of cut or fill may be made out very approximately from the contour lines, where an extensive surface of irregular outline is to be graded down or filled up to given plane (not a warped or curved surface). In Fig. 15 the full curved lines are the contour lines showing the original surface of the ground. Every fifth one is numbered, and made thicker and these were the contours shown on the original plot. Intermediate contours 1 foot apart may be interpolated or set out for the purpose of making this estimate. The figures around the outside of the boundary lines give the elevations of those points after it is graded down. The straight lines join points of equal elevation after grading; and since this surface is to be plane these lines are contours after grading. Wherever these two sets of contours intersect, the difference of their elevations is the depth of cut or fill at that point. If the points of equal cut or fill (in this case all in cut) are joined, a new set of curves are obtained, shown in Fig. 15, by dotted lines used for estimating the earthwork. The dotted boundaries are the horizontal projections of the traces on the natural surface of planes parallel to the final graded surface which are uniformly spaced 1 foot apart vertically. These projected areas are measured either by the acre-comb, talc-square, or planimeter, and called A_1, A_2, A_3 , etc., each area being bounded by the dotted line and the bounding lines of the figure, since on these bounding lines all the projections of all the traces unite, the slope here being vertical. The cubic contents in cubic feet for any two layers can be found from the formula :

$$V_{1-2} = \frac{1}{3} l (A_1 + 4A_2 + A_3) \text{—(Simpson's } \frac{1}{3} \text{ Rule), ... (64).}$$

l being the vertical interval between the projected areas, and

For the next two layers we have in cubic feet :

$$V_{2-3} = \frac{1}{3} l (A_3 + 4A_4 - A_2); \quad \dots \quad \dots \quad (65).$$

or for any even number of layers we have in cubic feet :

$$V = \frac{1}{3} l (A_1 + 4A_2 + 2A_3 + 4A_4 + 2A_5 + \dots A_n) \quad \dots \quad (66).$$

Where n is an odd number, I and A being in feet and square feet, respectively.

(2) *When the final surface is not to be a plane, but warped, undulating, or built to regular outlines like a fortification, a reservoir embankment or terraced grounds, go on as under:—*First make a contour map of the ground. Then lay down on this map a system of contour lines in a different colored ink, corresponding in elevation to the first set of contours, which will represent the final surface required. This second set of contours would be a series of straight lines if a regular surface, composed of plane faces, was to be constructed, but would be curving lines if the ground were to be brought to a final curving or undulating surface.

The closed figures bounded by the two sets of intersecting contours of the same elevation are *horizontal areas* of cut or fill, separated by the common vertical distance between the contours. The volumes here defined are oblique solids bounded by horizontal planes at top and bottom, and are a species of prismoids. The volume of one of these prismoids is found by applying the prismoidal formula to it, finding the end areas by means of an acre-comb or a planimeter, taking the length as the vertical distance between the contours. If the contours be drawn close enough together, then each alternate contour-area may be used as a middle-area, and the length of the prismoid taken at twice the vertical distance between the contours (or the volume may be computed by either of the formulas (64) or (56).)

Ex. 30. Let it be required to build a rectangular reservoir on a hill-side (Fig. 16), which shall be partly in excavation and partly in embankment, the ground being such as shown by the full contour lines. The contours are spaced 5 feet apart.

The top of the bank, shown by the full lines making the rectangle, is 20 feet wide at an elevation of 160 feet. The reservoir is 20 feet deep with side-slopes, 2 : 1 inside, and 3 : 1 outside, making the bottom elevation 140 feet, the area of the bottom 140 feet $\times$ 100 feet, top being 260 feet $\times$ 220 feet on the inside. The dotted lines are contours of the finished slopes, both inside and out, at elevations shown on the diagram. The *areas in fill* all fall within the thick closed dotted line marked *abkcdenfhija*, and the *cut areas* all fall within the thick closed dotted line marked *abkcdenfga*. These broken lines are grade lines. The horizontal sectional areas in fill and out are readily traced by following the closed figures formed by firm curved contours and dotted horizontal graded lines of equal elevation thus:—

At 110-foot level, sectional area in fill is bounded by curved contour marked 110 and two horizontal dotted lines marked 110.

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At 120-foot level, sectional area in fill is bounded by curved contour marked 120 and 2 horizontal dotted lines marked 120.

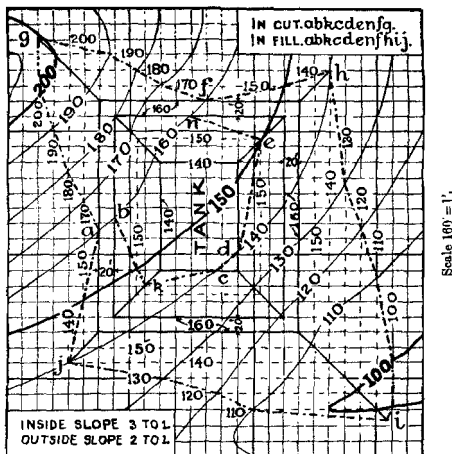


Fig. 16.—Estimating Cubic Contents of Earthwork of a Tank Embankment on Sloping Ground.

At 130-foot level, sectional area in fill is bounded by curved contour marked 130 and 2 horizontal dotted lines marked 130.

At 140-foot level, sectional area of cut is bounded by 4 horizontal firm lines marked 140 and curved contour marked 140.

The other areas are similarly traced. In the diagram the lines are drawn in black but they should be in different colored inks to avoid confusion. This second method should be applied to all cases where the graded area is considerable and the final relief is not a plane. If the contours be carefully located and be taken not more than 2 feet apart on steep slopes and 1 foot apart on low slopes this method will give as accurate results as may be obtained in any other way. Formula (66) may be used to compute the volume where the areas are the horizontal sectional areas bounded by contours of equal elevation and l is the vertical distance between the contours.

45. 6th Method.—To Find the Volume of a Prismoid between Two Three-level Sections, Surface divided into

Planes by Diagonals.—When the surface included between

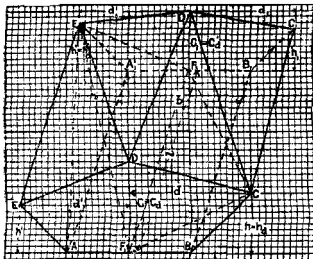


Fig. 17.—Finding the Volume of a Prismoid between 2 Three-level Sections.

two three-level sections is made up of 4 planes formed by joining the centre-height at one end with a side-height at the opposite end section on each side of the longitudinal centre line (Fig. 17), the joining lines being called diagonals, an exact computation of the cubic contents is easily made *without computing the mid-area*. Two diagonals which best fit the surface are to be noted in the field when cross-sections are taken. This volume is made up of six pyramids, three on each side of the centre vertical plane, $D D_1 F F_1$, having their apices on at the side-heights to which the diagonals are drawn, their bases: (1) in the opposite cross-section, (2) in the central vertical plane, and (3) in the road-hed of width $b/2$, respectively. Let the prismoid in Fig. 17 be made up of six pyramids $D_1 C_1 B_1 F_1 C$, $F_1 B_1 B F C$, $DD_1 F_1 F C$, $FAEDE_1$, $AFF_1 A_1 E_1$, $FF_1 DD_1 E_1$; C and E_1 being the apices. c, h, h^1, d, d^1 are the centre and side-heights, and distances-out at one cross-section; $c_1, h_1, h_1^1, d_1, d_1^1$, the corresponding values of the opposite section; c_a, c_a^1 are the center-heights, h_a, h_a^1 side-heights, and d_a, d_a^1 the distances-out on the right and left diagonals. Although the following formula appears long the computation by this method is very simple.

The Total Volume of the Prismoid, $V =$ Volumes of Pyramids,
 $D_1 C_1 B_1 F_1 C + F_1 B_1 B F C + DD_1 F_1 F C + FAEDE_1 + AFF_1 A_1 E_1$

$$+ FF_1 DD_1 E_1 = \left(\frac{c \cdot d_1}{2} + \frac{b \cdot h_1}{2} \right) \frac{l}{8} + \frac{b \cdot l \cdot h}{2 \times 3} + \frac{(c + c_1) \cdot l \cdot d}{2 \times 8} + \left(\frac{c \cdot d^1}{2} + \frac{b \cdot h^1}{2} \right) \frac{l}{8} \\ + \frac{b \cdot l \cdot h^1}{2 \times 3} + \frac{(c + c_1)}{2} \cdot d_1^1 \cdot \frac{l}{8} = \frac{l}{6} \left[c(d + d^1) + c_1(d_1 + d_1^1) + c_1 d + c d_1^1 + \right. \\ \left. \frac{b}{2} \{ h^2 + h_1^2 + h^1 + h_1^1 + h + h_1^1 \} \right] \quad \dots (57).$$

Substituting the values of $c_a, c_a^1, h_a, h_a^1, d_a, d_a^1$ of the diagonals the

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equation comes to

$$V = \frac{l}{6} \left[c(d+d') + c_1(d_1+d'_1) + c_2d_2 + c'_2d'_2 + \frac{h}{2} \{ h+h_1+h'_1+h'_1+h_2+h'_2 \} \right] \dots (68).$$

The great advantage of this method is that the data are all in the field-notes.

Ex. 31. Find the Volume of the prismoid of which the following are the field-notes for a base of 20' and side slopes 2 to 1; the sections being 100' apart. The upper figures are the distances-out and

the lower ones the heights, + sign being used for fills. The calculations may be tabulated as under:—

$c(d+d')$	$c_1(d_1+d'_1)$	c_2d_2	$c'_2d'_2$	$\frac{b}{2}(h+h_1+h'_1+h'_1+h_2+h'_2)$	$\frac{l}{6}$	Cubic
2.6(16.8+16)	4(22+16)	2.6×14	4×16	10(3.4+3+6+3+6+3)	$\frac{100}{6}$	
85.28	152	57.2	64	244	$\frac{100}{6}$	

46. Excavations under Water, How Measured.—Sometimes it is required to ascertain the amount of earth, sand, mud or rock removed from the beds of rivers, harbours, canals, etc. If this be done by soundings alone the contractor would not get his costs for depths excavated below the required limit; and besides, foreign material is apt to flow in and partially replace what is removed, so that the material actually excavated is not adequately shown by soundings within the required limits. It is common, therefore, to pay for the material actually removed, an overseer being usually employed to see that no useless work is done beyond proper bounds. The material is then measured on platforms of dumping boats in cubic feet. There are two general methods of gauging boats: One is to actually measure the dimensions of each load, often done in case of rock, and the other is to measure the displacement of the boat, commonly ascertained with dredged material. When the boat is gauged by measuring its displacement, it must be gauged both before and after loading, and the depth of water in the hold observed

at gauging. A displacement diagram or table is prepared for each barge from its actual dimensions, in terms of its mean draught. The draught is to be ascertained by taking 4 gaugings at 4 symmetrically located points on the sides, these being quarter the length of the barge from the ends. Fixed gauge-scales, reading to feet and tenths may be painted on the side of the boat, or if it is flat bottomed, a gauging rod, with a hook on its lower end at the zero of the scale, may be used, and readings taken at these 4 points. Any distortion of the boat under its load, or any unsymmetrical loading will then be allowed for, the mean of 4 gauge readings being the true mean draught of the boat.

To Prepare a Displacement Diagram, the areas of the surfaces of displacement must be found for a series of depths uniformly spaced. This series may begin with the depth for no load, the hold being dry. They should then be found for each half a foot up to the maximum draught. If the boat has vertical sides and sloped ends these areas are rectangles. If the boat is modelled to curved lines, the areas must be obtained from original drawings of the boat, or by actual measurement, in either case easily by a planimeter. The prismoidal formula may be applied for computing the displacement. Thus, Let A_0, A_1, A_2, A_3 , etc., be the areas of the displaced water surfaces at uniform vertical distances h apart. Then for an even number of intervals we have in cu. ft. :—

$$V = \frac{1}{3}h (\Lambda_0 + 4\Lambda_1 + 2\Lambda_2 + 4\Lambda_3 + \dots \Lambda_n) \dots \quad (66).$$

If the total range in draught be divided into 6 equal parts each equal to h , then Weddle's rule would give a nearer approximation (q.v., p. 455, Author's "*Manual of Surveying*"). These rules are also applicable to gauging of reservoirs, or of any irregular volume or cavity.

After the displaced volume of water is found, the corresponding quantity of earth is found by applying a proper constant co-efficient which is always less than unity, and equals the reciprocal of the specific gravity of the material. This must be found by experiment. A measured volume of any material put into a gauged boat will give the proper co-efficient for that material. Thus if the measured volume V_1 gives displacement of V , then $V_1/V = C$ is the co-efficient to apply to the displacement to give the volume of that material.

47. Specific Gravities and Weights of some of the Earths are given in the following Table :—

TABLE IV.—Specific Gravity and Weight of some Earths.

	Specific Gravity.	Weight of a cubic foot in lbs.		Specific Gravity.	Weight of a cubic foot in lbs.
Clay ...	1.93—2.09	120—130	Shingle	1.42	88
Earth ...	1.6—2.0	100—125	Bitumen ...	84—1.36	52—85
Gravel ...	1.77	110	Pit-sand coarse.	1.61	100
Mud ...	1.30—1.77	81—120	„ fine	1.52	95
Sand, quartz	2.6	162	Sandstone	2.20	137
„ River	1.88	117	Limestone ...	2.23	139

48. Angle of Repose.—All earthworks have a certain natural adhesion which allows of temporary vertical cuttings. The permanent stability is due to friction alone. The usual slopes in Engineering practice are : vertical, $\frac{1}{2}$ to 1, 1 to 1, $1\frac{1}{2}$ to 1, and 2 to 1 for hard rock, soft rock, Muram (gravel), ordinary soil, and loam, respectively. The corresponding angles of slopes are shown in Table VI, p. 157. The following Table V gives the natural angles of slope, called the *Angle of Repose*, or *Angle of Rest*, of various materials, i.e., the natural slope they would assume when loosely tipped and left to themselves.

TABLE V.—Angles of Repose.

Nature of soil.	Angle of slope.	Weight per cubic foot.	Nature of soil.	Angle of slope.	Weight per cubic foot.
Gravel ...	40°	112 lbs.	Compact earth	50°	100 lbs.
Dry sand ...	38°	92 „	Shingle	39°	141 „
Sand ...	22°	116 „	Rubble	45°	153 „
Vegetable earth } ...	28°	83 „	Drained clay	45°	112 „
			Wet clay	16°	124 „

The best materials for banks are rock shivers, shingle, gravel, and clean sand. Dry clay is also good, but on no account should wet clay be employed, it subsides and slips. The worst stuff is a clay mixed with sand. In rock we may have vertical sides in a cutting, especially igneous rocks such as granite, trap, etc., but sedimentary rocks, such as shale, require a little forethought before cutting. In all such cases judgment and experience on the part of the Engineer are the best guides.

49. Shrinkage of Earthwork.—Excavated earth first increases in volume, when removed from a cut and dumped on a fill, but it gradually settles, or shrinks, until it finally comes to occupy a less volume than it formerly did in the cut. Both the amounts, initial

increase and final shrinkage, depend on the nature of the soil, its condition when removed, and the manner of depositing it in place, and the weather conditions during the progress of the work. One may judge of the probable shrinkage by estimating the proportion of voids which will probably be ultimately filled by settlement. For rock the permanent increase in volume is from 60 to 80 per cent., the greater increase corresponding to a smaller average size of fragment. In sand the settlement is small, whereas in the black cotton soil, as in the Central Provinces and in places in Orissa, it is very large. A very fair all-round settlement allowance is as follows :—

Bank	1 to	5 feet in height	...	2" per foot of bank.
"	5	" 20	" " "	1 $\frac{3}{4}$ " " " " + 1 foot.
"	20	" 30	" " "	1 $\frac{1}{2}$ " " " " + 1 "
"	30	" 40	" " "	1 $\frac{1}{4}$ " " " " + 1 "

That is to say, a 32-foot-high bank will have to be thrown up 36' 4" high. This settlement allowance will include allowance for wastage which the coolies are in the habit of making in preparing footpaths, filling up hollows both inside and outside the profiles.

Chapter VI.—Calculation of Superficies of Slopes to ascertain the Area of Turfing, and Stone pitching, etc., required on Slopes.

50. Calculation of Turfing or Pitching is made from the formula.—

Length of Slope $AL = d\sqrt{1+S^2}$ (Figs. 1 and 2, p. 2) ... (69).

∴ Area of Slope for a Length of 100 ft. = $100 d\sqrt{1+S^2}$... (70).

Ex. 82. Substituting $d=1$, and $S=\frac{1}{2}$, we have

Area of Slope for a Length of 100 = $100 \times 1 \times \sqrt{1+(\frac{1}{2})^2} = 103.077$ sq. ft.

In this way we get the figures in Cols. 4 and 8 of Table VI.

These areas are given in the first line of Table VII, p. 158, in which, the slope-lengths being proportional to the heights or depths, areas of slopes for 100 feet lengths for different slope-ratios are given for heights of from 1 to 100 feet increasing by 1'. The areas for decimals of a foot are found by inserting a decimal point at 2 places to the left for $\frac{1}{100}$ of a foot in height; and at 1 place to the

CALCULATION OF SUPERFICIES OF SLOPES. 157

eff for $\frac{1}{2}$ of a foot increase in height in the figures given in the Table VII, e.g., for 0·25' height and slope-ratio, $1\frac{1}{2} : 1$, the area is 45·07 sq. ft., and for 2·5' height and slope-ratio $1\frac{1}{2} : 1$, the area is 450·7 sq. ft.=451 sq. ft., say, and so on.

TABLE VI —Lengths and Angles of Slopes, Etc.

Slopes.	Angle with Horizon.	Length of slope height = 1.	Area of slope, h = 1, for length = 100'	Slopes.	Angle with Horizon.	Length of slope h = 1.	Area of slope, h = 1, for length = 100'.
1	2	3	4	5	6	7	8
$\frac{1}{2} : 1$	75°58'	1·03077	103·077	$2\frac{1}{2} : 1$	21°48'	2·69258	269·258
$\frac{3}{4} : 1$	63°26'	1·11803	111·803	$3 : 1$	18°26'	3·16228	316·228
$1 : 1$	53°8'	1·25000	125·000	$3\frac{1}{2} : 1$	15°57'	3·64005	364·005
$1\frac{1}{4} : 1$	45°0'	1·41421	141·421	$4 : 1$	14°2'	4·12311	412·311
$1\frac{1}{2} : 1$	33°42'	1·60278	160·278	$5 : 1$	11°19'	5·09902	509·902
$2 : 1$	26°34'	2·23607	223·607	$6 : 1$	9°27'	6·08276	608·276

Ex. 83. Find the Area of Turfing on one slope of an embankment for a length of 100 feet, the depth of Bank being 19·21 feet and slope-ratio $1\frac{1}{2} : 1$.

By calculation, Area of Turfing = $19\cdot21\sqrt{1+(1\cdot5)^2} \times 100 = 3463\cdot140$ sq. ft.

From Table VII., p. 158. we have at the intersection

of $1\frac{1}{2} : 1$ and 19' = 3425 sq. ft.
and at the intersection of $1\frac{1}{2} : 1$ and 21' = 38 sq. ft.

TOTAL = 3,463 sq. ft.

If both the slopes have the same slope-ratio, the amount of Turfing for a length of 100 ft. will be 6926 sq. ft.

51. Concluding Remarks.—The above Tables have been prepared with great care and the examples given clearly show how the Tables can be utilised expeditiously and correctly for the preparation of estimates of Earthwork and superficies of slopes in connection with roads, Railways and Canals, etc. It is to be hoped that the more the Tables will be handled the more easier and quicker will their application found to be.

TABLE VII.—Superficies of Slopes corresponding with Different Heights of Cutting or Embankment for a Length of 100 foot in square feet.

Height in Feet.	1:1	3:1	2:1	1:1	1 1/2:1	2:1	2 1/2:1	3:1	3 1/2:1	4:1	5:1	6:1
1	103	112	125	141	180	224	269	316	364	412	510	608
2	206	224	250	283	361	447	539	632	728	825	1020	1217
3	309	335	375	424	541	671	808	949	1092	1237	1530	1825
4	412	447	500	566	721	891	1077	1265	1456	1649	2040	2433
5	515	559	625	707	901	1118	1346	1581	1820	2062	2550	3041
6	618	671	750	849	1082	1342	1616	1897	2184	2474	3059	3650
7	722	783	875	990	1262	1565	1885	2214	2548	2886	3569	4258
8	825	894	1000	1131	1442	1789	2154	2530	2912	3298	4079	4866
9	928	1006	1125	1273	1623	2012	2423	2846	3276	3711	4589	5474
10	1031	1118	1250	1414	1803	2236	2693	3162	3640	4123	5099	6083
11	1134	1230	1375	1556	1983	2460	2962	3479	4004	4535	5609	6691
12	1237	1342	1500	1697	2163	2683	3231	3795	4368	4948	6119	7299
13	1340	1453	1625	1838	2344	2907	3500	4111	4732	5360	6629	7908
14	1443	1565	1750	1980	2524	3130	3770	4427	5096	5772	7139	8516
15	1546	1677	1875	2121	2704	3354	4039	4743	5460	6185	7649	9124
16	1649	1789	2000	2263	2884	3578	4308	5060	5824	6597	8158	9732
17	1752	1901	2125	2404	3065	3801	4577	5376	6188	7009	8668	10341
18	1855	2012	2250	2546	3245	4025	4847	5692	6552	7422	9178	10949
19	1958	2124	2375	2687	3425	4249	5116	6008	6916	7834	9688	11557
20	2062	2236	2500	2828	3606	4472	5385	6325	7280	8246	10198	12166
21	2165	2348	2625	2970	3786	4696	5654	6641	7644	8659	10708	12774
22	2268	2460	2750	3111	3966	4919	5924	6957	8008	9071	11218	13382
23	2371	2571	2875	3253	4146	5143	6193	7273	8372	9483	11728	13990
24	2474	2683	3000	3394	4327	5367	6462	7589	8736	9895	12238	14599
25	2577	2795	3125	3536	4507	5590	6731	7906	9100	10303	12748	15207
26	2680	2907	3250	3677	4687	5814	7001	8222	9464	10720	13257	15815
27	2783	3019	3375	3818	4868	6037	7270	8538	9828	11132	13767	16423
28	2886	3130	3500	3960	5048	6261	7539	8854	10192	11545	14277	17032
29	2989	3242	3625	4101	5228	6485	7808	9171	10556	11957	14787	17640
30	3092	3354	3750	4243	5408	6708	8078	9487	10920	12369	15297	18248
31	3195	3466	3875	4384	5589	6932	8347	9803	11284	12782	15807	18857
32	3298	3578	4000	4525	5769	7155	8616	10119	11648	13194	16317	19465
33	3402	3689	4125	4667	5949	7379	8886	10436	12012	13606	16827	20073
34	3505	3801	4250	4808	6129	7602	9155	10752	12376	14019	17337	20681
35	3608	3913	4375	4950	6310	7826	9424	11068	12740	14431	17847	21290
36	3711	4025	4500	5091	6490	8050	9693	11384	13104	14843	18356	21898
37	3814	4137	4625	5233	6670	8273	9963	11700	13468	15256	18866	22506
38	3917	4249	4750	5374	6851	8487	10232	12017	13832	15668	19376	23114
39	4020	4360	4875	5515	7031	8721	10501	12333	14196	16080	19886	23723
40	4123	4472	5000	5657	7211	8944	10770	12649	14560	16492	20396	24331
41	4226	4584	5125	5798	7391	9168	11040	12965	14924	16905	20906	24939
42	4329	4696	5250	5940	7572	9391	11309	13282	15288	17317	21416	25548
43	4432	4808	5375	6081	7752	9615	11578	13598	15652	17729	21926	26156
44	4535	4919	5500	6223	7932	9836	11847	13914	16016	18142	22436	26764
45	4638	5031	5625	6364	8113	10062	12117	14230	16380	18554	22946	27372
46	4742	5143	5750	6505	8293	10286	12386	14546	16744	18966	23455	27981
47	4845	5255	5875	6647	8473	10510	12655	14863	17108	19379	23965	28589
48	4948	5367	6000	6788	8653	10733	12924	15179	17472	19791	24475	29197
49	5051	5478	6125	6930	8834	10957	13194	15495	17836	20205	24985	29806
50	5154	5590	6250	7071	9014	11180	13463	15811	18200	20616	25495	30414

CALCULATION OF SUPERFICIES OF SLOPES. 159

TABLE VII.—Superficies of Slopes corresponding with Different Heights of Cutting or Embankment for a Length of 100 foot in square feet.

Height in Feet.	1:1	1:1	1:1	1:1	1:1	2:1	2:1	3:1	3:1	4:1	5:1	6:1
51	5257	5702	6375	7212	9194	11404	13732	16128	18564	21028	26005	31022
52	5360	5814	6500	7354	9374	11628	14001	16444	18928	21440	26515	31630
53	5463	5926	6625	7495	9555	11851	14271	16790	19292	21852	27025	32239
54	5566	6037	6750	7637	9735	12075	14540	17076	19656	22265	27535	32847
55	5669	6149	6875	7778	9915	12298	14809	17393	20020	22677	28045	33455
56	5772	6261	7000	7920	10096	12522	15078	17709	20384	23089	28555	34063
57	5875	6373	7125	8061	10276	12746	15348	18025	20748	23502	29064	34672
58	5978	6485	7250	8202	10456	12969	15617	18341	21112	23914	29574	35280
59	6082	6596	7375	8344	10636	13193	15886	18657	21476	24326	30084	35888
60	6185	6708	7500	8485	10817	13416	16155	18974	21840	24739	30594	36497
61	6288	6820	7625	8627	10997	13640	16425	19290	22204	25151	31104	37105
62	6391	6932	7750	8768	11177	13864	16694	19606	22568	25563	31614	37713
63	6494	7044	7875	8910	11358	14087	16963	19922	22932	25976	32124	38321
64	6597	7155	8000	9051	11538	14311	17233	20239	23296	26388	32634	38930
65	6700	7267	8125	9192	11718	14534	17502	20555	23660	26800	33144	39538
66	6803	7379	8250	9334	11898	14758	17771	20871	24024	27213	33654	40146
67	6906	7491	8375	9475	12079	14982	18040	21187	24388	27625	34163	40754
68	7009	7603	8500	9617	12259	15205	18310	21504	24752	28037	34673	41363
69	7112	7714	8625	9758	12439	15429	18579	21820	25116	28449	35183	41971
70	7215	7826	8750	9899	12619	15652	18848	22136	25480	28862	35693	42579
71	7318	7938	8875	10041	12800	15876	19117	22452	25844	29274	36203	43188
72	7422	8050	9000	10182	12980	16100	19387	22768	26208	29686	36713	43796
73	7525	8162	9125	10324	13160	16323	19656	23085	26572	30099	37223	44404
74	7628	8273	9250	10465	13341	16547	19925	23401	26936	30511	37733	45012
75	7731	8385	9375	10607	13521	16770	20194	23717	27300	30923	38243	45621
76	7834	8497	9500	10748	13701	16994	20464	24033	27664	31336	38753	46229
77	7937	8609	9625	10889	13881	17218	20733	24350	28028	31748	39262	46837
78	8040	8721	9750	11031	14062	17441	21002	24666	28392	32160	39772	47446
79	8143	8832	9875	11172	14242	17665	21271	24982	28756	32573	40282	48054
80	8246	8944	10000	11314	14422	17889	21541	25298	29120	32985	40792	48662
81	8349	9056	10125	11455	14603	18112	21810	25614	29484	33397	41302	49270
82	8452	9168	10250	11597	14783	18336	22079	25931	29848	33810	41812	49879
83	8555	9280	10375	11738	14963	18559	22348	26247	30212	34222	42322	50487
84	8658	9391	10500	11879	15143	18783	22618	26563	30576	34634	42832	51095
85	8762	9503	10625	12021	15324	19007	22887	26879	30940	35046	43342	51703
86	8865	9615	10750	12162	15504	19230	23156	27196	31304	35459	43852	52312
87	8968	9727	10875	12304	15684	19454	23425	27512	31668	35871	44361	52920
88	9071	9839	11000	12445	15864	19677	23695	27828	32032	36283	44871	53528
89	9174	9950	11125	12586	16045	19901	23964	28144	32396	36696	45381	54137
90	9277	10062	11250	12728	16225	20125	24233	28461	32760	37108	45891	54745
91	9380	10174	11375	12869	16405	20348	24502	28777	33124	37520	46401	55353
92	9483	10286	11500	13011	16586	20572	24772	29093	33488	37933	46911	55961
93	9586	10398	11625	13152	16766	20795	25041	29409	33852	38345	47421	56570
94	9689	10509	11750	13294	16946	21019	25310	29725	34216	38757	47931	57178
95	9792	10621	11875	13435	17126	21243	25580	30042	34580	39170	48441	57786
96	9895	10733	12000	13577	17306	21466	25849	30363	34944	39583	48951	58394
97	9998	10845	12125	13718	17487	21690	26118	30684	35308	39994	49461	59003
98	10102	10957	12250	13859	17667	21913	26387	30999	35672	40406	49970	59611
99	10205	11068	12375	14001	17848	22137	26657	31307	36036	40819	50480	60219
100	10308	11180	12500	14142	18028	22361	26926	31616	36399	41231	50990	60828

OPINIONS ON "MANUAL OF SURVEYING" VOL. I., FIRST EDITION.

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