Onigum Road Surveys
with Finned Trails and Misc. Surveys


KEUFFEL \& ESSERCO.
DRAWING MATERIALS
AND
SURVEYING INSTRUMENTS.
NEW YORK.
CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.
TABLES FOR EXCAVATIONS AND EMBANKMENTS.
DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.


For Keith's Railroad Curve Tabels see end of book.




Tinoze Sinbohs
O- Grassland
C- Cultivated
1- Prush
2-Muskeq
A- Aspen
3- Brich
4- Ceda
5- Tack Pine
6 - White Spruce
7-Blade Spruce o Tanaruat
8- Norway Pine
9- White line
M_ Dixed Hundwoods B- Dalsom
tr. - Naple.
$\therefore$ Poles.


Natural Trigonometrical Functions.

| $\begin{gathered} \text { Angle. } \\ 0^{-1} \end{gathered}$ | Sine. | Tan. | Sec. | sec. |  | Cosin. |  | Angle. | Sine. | Tan. | Sec. | Cosec. | Cotg. Cosin. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 0 | 0 | 1. | $\propto$ | $\propto$ | 1. | 90 |  | . 1392 | . 1405 | 1.0098 | 7.185 | 7.115 | . 99027 | 82 |
| 10 | .0029 | . 0029 |  | 343.8 | 343.8 | I. | 50 | 10. | . 1421 | . 1435 | 1.0102 | 7.040 | 6.968 | . 98986 | 50 |
| 20. | . 0058 | . 0058 |  | 171.9 | 171.9 | . 99998 | 40 | 20. | . 1449 | . 1465 | 1.0107 | 6.900 | 6.827 | . 98944 | 40 |
|  | . 0087 | . 0087 |  | . 6 | 114.6 | . 99996 | 30 | 30. | . 1478 | . 1495 | 1.0111 | 6.766 | 6.691 | . 98902 | 30 |
|  | . 0116 | .01161 | 1.0001 | 85.94 | 85.94 | . 99993 | 20 | 40. | . 1507. | . 1524 | 1.0115 | 6.636 | 6.561 | . 98858 | 20 |
| 50. | . 0145 | . 0145 | 1.0001 | 68.76 | 68.75 | . 99989 | 10 | 50. | . 1536 | 1554 | 1.0120 | 6.512 | 6.435 | . 98814 | 10 |
|  | . 0175 | . 01751 | 1.0002 | 57.30 | 57.29 | . 99985 | 89 | 9 | . 1564 | . 1584 | 1.0125 | 6.394 | 6.314 | . 98769 | 81 |
|  | . 0204 | . 0204 | 1.0002 | 49.11 | 49.10 | . 99979 | 50 | 10. | . 1593 | . 1614 | 1.0129 | 6.277 | 6.197 | . 98723 | 50 |
| 20. | . 0233 | . 0233 | 1.0003 | 42.98 | 42.96 | . 99973 | 40 | 20. | . 1622 | . 1644 | 1.0134 | 6.166 | 6.084 | . 98676 | 40 |
| 30. | . 0262 | . 02621 | 1.0003 | 38.20 | 38.19 | . 99966 | 30 | 30. | . 1650 | . 1673 | 1.0139 | 6.059 | 5.976 | . 98629 | 30 |
| 40. | . 0291 | . 02911 | 1.0004 | 34.38 | 34.37 | . 99958 | 20 | 40. | . 1679 | . 1703 | 1.0144 | 5.955 | 5.871 | . 98580 | 20 |
| 50. | . 0320 | . 0320 | 1.0005 | 31.26 | 31.24 | . 99949 | 10 | 50. | . 1708 | . 1733 | 1.0149 | 5.855 | 5.769 | . 98531 | 10 |
|  | . 0349 | . 03491 | 1.0006 | 28.65 | 28.64 | . 99939 | 88 | 10 | . 1736 | . 1763 | 1.0154 | 5.759 | 5.671 | . 98481 | 80 |
| 10. | . 0378 | . 03781 | 1.0007 | 26.45 | 26.43 | . 99929 | 50 | 10. | . 1765 | . 1793 | 1.0160 | 5.665 | 5.578 | . 98430 | 50 |
| 20. | . 0407 | . 04071 | 1.0008 | 24.56 | 24.54 | . 99917 | 40 | 20. | . 1794 | .1823 | 1.0165 | 5.575 | 5.485 | . 98378 | 40 |
| 30. | . 0436 | . 04371 | 1.0010 | 22.93 | 22.90 | . 99905 | 30 | 30. | . 1822 | . 1853 | 1.0170 | 5.488 | 5.396 | . 98325 | 30 |
| 40. | . 0465 | . 04661 | 1.0011 | 21.49 | 21.47 | . 99892 | 20 | 40. | . 1851 | . 1883 | 1.0.176 | 5.403 | 5.309 | . 98272 | 20 |
| 50. | . 0494 | . 04951 | 1.0012 | 20.23 | 20.21 | . 99878 | 10 | 50. | . 1880 | . 1914 | 1.0181 | 5.320 | 5.226 | . 98218 | 10 |
| 3 | . 0523 | . 05241 | 1.0014 | 19.11 | 19.08 | . 99863 | 87 | 11 | . 1908 | . 1944 | 1.0187 | 5.241 | 5.145 | . 98163 | 79 |
| 10. | . 0552 | . 05531 | 1.0015 | 18.10 | 18.07 | . 99847 | 50 | 10. | . 1937 | . 1974 | 1.0193 | 5.164 | 5.066 | . 98107 | 50 |
| 20. | . 0581 | . 05821 | 1.0017 | 17.20 | 17.17 | . 99831 | 40 | 20. | . 1965 | . 2004 | 1.0199 | 5.089 | 4.989 | . 98050 | 40 |
| 30. | . 0610. | . 06121 | 1.0019 | 16.38 | 16.35 | . 99813 | 30 | 30. | . 1994 | 2035 | 1.0205 | 5.016 | 4.915 | . 97992 | 30 |
| 40. | . 0640. | . 08411 | 1.0020 | 15.64 | 15.60 | . 99795 | 20 | 40. | . 2022 | . 2065 | 1.0211 | 4.945 | 4.843 | . 97934 | 20 |
| 50. | . 0869 | . 08701 | 1.0022 | 14.96 | 14.92 | . 997776 | 10 | 50. | . 2051 | . 2095 | 1.0217 | 4.877 | 4.773 | . 97875 | 10 |
| 4. | . 0698 . | . 06991 | 1.0024 | 14.34 | 14.30 | . 99756 | 86 | 12 | . 2079 | . 2126 | 1.0223 | 4.810 | 4.705 | . 97815 | 78 |
| 10. | . 0727 . | . 07291 | 1.0027 | 13.76 | 13.73 | . 99736 | 50 | 10. | . 2108 | . 2156 | 1.0230 | 4.745 | 4.638 | . 97754 | 50 |
| 20. | . 0756 | . 07581 | 1.0029 | 13.23 | 13.20 | . 99714 | 40 | 20 | . 2136 | . 2186 | 1.0236 | 4.682 | 4.574 | . 97692 | 40 |
| 30 | . 0785 | . 07871 | 1.0031 | 12.75 | 12.71 | . 99692 | 30 | 30 | . 2164 | . 2217 | 1.0243 | 4.620 | 4.511 | . 97630 | 30 |
| 40. | . 0814 | . 08161 | 1.0033 | 12.29 | 12.25 | . 99668 | 20 | 40 | . 2193 | . 2247 | 1.0249 | 4.560 | 4.449 | . 97566 | 20 |
| 50 | . 0843 | . 08461 | 1.0036 | 11.87 | 11.83 | . 99644 | 10 | 50 | . 2221 | . 2278 | 1.0256 | 4.502 | 4.390 | . 97502 | 10 |
| 5 | . 0872 | . 08751 | 1.0038 | 11.47 | 11.43 | . 99619 | 85 | 13 | . 2250 | . 2309 | 1.0263 | 4.445 | 4.331 | . 97437 | 77 |
| 10 | . 0901 | . 0904 | 1.0041 | 11.10 | 11.06 | . 99594 | 50 | 10 | 2278 | . 2339 | 1.0270 | 4.390 | 4.275 | . 97371 | 50 |
| 20 | . 0929 | . 09341 | 1. 0043 | 10.76 | 10.71 | . 99567 | 40 | 20 | . 2306 | . 2370 | 1.0277 | 4.336 | 4.219 | . 97304 | 40 |
| 30 | . 0958 | . 0963 | 1.0046 | 10.43 | 10.39 | . 99540 | 30 | 30 | . 2334 | . 2401 | 1.0284 | 4.284 | 4.165 | . 97237 | 30 |
| 40 | . 0987 | . 0992 | 1.0049 | 10.13 | 10.08 | . 99511 | 20 | 40 | . 2363 | . 2432 | 1.0291 | 4.232 | 4.113 | . 97169 | 20 |
| 50 | . 1016 | . 1022 | 1.0052 | 9.839 | 9.788 | . 99482 | 10 | 50 | 2391 | . 2462 | 1.0299 | 4.182 | 4.061 | . 97100 | 10 |
| 6 | . 1045 | . 1051 | 1.0055 | 9.567 | 9.514 | . 99452 | 84 | 14 | . 2419 | 2493 | 1.0306 | 4.133 | 4.011 | . 97030 | 76 |
| 10 | . 1074 | . 1080 | 1.0058 | 9.309 | 9.255 | . 99421 | 50 | 10 | . 2447 | 2524 | 1.0314 | 4.086 | 3.962 | . 96959 | 50 |
| 20 | . 1103 | . 1110 | 1.0061 | 9.065 | 9.010 | . 99390 | 40 | 20 | . 2476 | 2555 | 1.0321 | 4.039 | 3.914 | . 96887 | 40 |
| 30 | . 1132 | . 1139 | 1.0065 | 8.834 | 8.777 | . 99357 | 30 | 30 | . 2504 | 2586 | 1.0329 | 3.994 | 3.867 | . 96815 | 30 |
| 40 | . 1161 | . 1169 | 1.0068 | 8.614 | 8.556 | . 99324 | 20 | 40 | . 2532 | . 2617 | 1.0337 | 3.949 | 3.82 | . 96742 | 20 |
| 50 | 0.1190 | . 1198 | 1.0072 | 8.405 | 8.345 | . 99290 | 10 | 50 | . 2560 | 2648 | 1.0345 | 3.906 | 3.776 | . 96667 | 10 |
| 7 | . 1219 | . 1228 | 1.0075 | 8.206 | 8.144 | . 99255 | 83 | 15 | . 2588 | . 2679 | 1.0353 | 3.864 | 3.732 | . 96593 | 75 |
| 10 | - 1248 | . 1257 | 1.0079 | 8.016 | 7.953 | . 99219 | 50 | 10 | . 2616 | . 2711 | 1.0361 | 3.82 | 3.689 | . 96517 | 50 |
| 20 | 0.1276 | . 1287 | 1.0082 | 7.834 | 7.770 | . 99182 | 40 | 20 | . 2644 | . 2742 | 1.0369 | 3.782 | 3.647 | . 96440 | 40 |
| 30 | . 1305 | . 1317 | 1.0086 | 7.661 | 7.596 | . 99144 | 30 | 30 | . 2672 | . 2773 | 1.0377 | 3.742 | 3.606 | . 96363 | 30 |
| 40 | 0.1334 | . 1348 | 1.0090 | 7.49 | 7.429 | . 99106 | 620 | 40 | . 2700 | . 2805 | 1.0386 | 3.703 | 3.566 | . 96285 | 20 |
| 50 | 0.1363 | . 1376 | 1.0094 | 7.337 | 7.269 | . 99067 | ${ }_{82} 10$ | 50 | . 2728 | . 2836 | 1.0394 | 3.665 | 3.526 | . 96206 | ${ }_{74} 10$ |
| Cosin. |  | Coty. | Cosec. | Sec. | Tan. | Sine. | Angle. | Cosin. |  | Cotg. | Cosec. | Sec. | Tan. | Sine. | Angle. |




MADE IN GERMANY.


Agency Bay Toads.



S870 E $4.95 *-1 / 4$ Sepo.15 +16 bears 5.6 y/ks.

NI E 10.90
N68 $2 J^{\circ} E 4.00$
$N 85^{\circ} E 4.40$.
$N 40^{\circ} \mathrm{E} \quad 12.60 \mathrm{r}$
e 3.50 Bia Rocis App. zchs. E.
@ 1.38-Stalu on 5. Side fot 10


N41 $1^{\circ} 15^{\prime} E 2.00$ -
NOS ${ }^{\circ}$ E
$N 30^{\circ} 30^{\circ} E 8.60$
$N 9^{\circ} E \quad 6.40$
$N 30^{\circ}+5^{\circ} E 10.40$ @ 7.00 - thantre Gampleafe Enst
Find or Roud
FROM LAST STATION THE COR. Beplres N62 ${ }^{\circ}$ - $4.85^{\circ} \mathrm{chns}$.

Lemis huse N80 W 34 le
aypu 2. 50 chns


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& \text { N30.30'W } \quad 9.70 \text {. }
\end{aligned}
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6.90
$\sqrt{2} 3^{\circ}+5^{2}$ E
N37 ${ }^{\circ} 5^{\prime} E$
$1\left(24^{\circ} 305\right.$
N13015 13.20.

| N $13^{\circ} 15^{\prime} E$ | 8.49 |  |
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| GAST | .75 | To $1 / 4 \operatorname{Secs} \frac{17}{20}$ |






e3og to us.g.k.e corder ground. Brassed
$\operatorname{tar} 7^{\circ} 50$ T22'E $72.2^{\prime}$ WeThubrenaw SGMC.BT. 5"11 ํ 85.21 51










Edqe Brush

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|  | 8.95 | 1302.11 |  |  | 1293.16 |
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| 1+90 |  |  | 1.45 |  | 1300.66 |
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| 4too B.D | 1.55 | 1300.94 |  |  | 129.34 |
| ex +50 |  |  | 6.10 |  | 1294. 34 |
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| $1+50$ |  |  | 3. 15 |  | 1292.79 |
| $2+00$ |  |  | 2.85 |  | 1298.09 |
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| $55 / 195$ $0+50$ |  | * | 7.57 |  | 1293.37 |
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| $8+00 B . M .$ | 4.57 | 1299.43 |  |  | 1294.86 |
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-60' buere froma banke asen rese.-bytine kace vo: Chiti Kome site fonar uy $20^{\circ}$
Rend nues to baet. Amernge elew $=6-9 \mathrm{ft}$
Corued appen Pape


brt beynuming of xiP beem $6-9 / 4$

goned sile bav b-10

Moénde. TiPsitita. Ban 7-10:




Sergh tóo＊in croobue siby－at too and
Sさ4゙々W 500 \＃ 10
S71／2N 900．$\underbrace{19}$

Traverve West side halke 13 ．
South 60i AP，

STE 250．：．vente 60．－
S42W $1980-=4$
Sirw $500-45$
SIVE 900．$=6$


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＂5－cinend of Lakis kang tuand

Sauaw Oan-Canp Geando

- Beprax. zbá vó deared.

Oole + Pitch - 4 ave dam.
1Pmpp-Steps down 4' bank showld be fixed, and base made for pump

Prain - suropers pungowrato.
FreEpLAGE- Stack too lom. - Front openting to larpe:
Trees showld be pruned with som. Bergot. Sturps $x$ refuse shonly

Lake 13 Comprreouro.
FFreplacen hut a vary good lob. sbould
de rebunt
Pmp - ok

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\text { Beacht } \sim \text { Nott - No dool for batining. }
$$

Tonets - OR
This cumperaned dannot be classed as \#1. Wh recerve a limited use fron preprcan. llat desiresble for camuion.

Ovenar Camo Geouno
Norway Beact Camp Ground


Truotsor dam Come Gourno.
This moll bo used fol prests. Bother flece thewle be burk phter apoveniepers qutr


Woutze Bar Cont Ground
The steep bank on water
Buy should be sloped, trees pideried
and some sod laid to stop. erosion.
Planting of Norway and
White Prone along edge af bonk needed ip spots.
landing op fast side enlarged. Area for goo nest of up re as to permit more
air thru to exminde





Sant 6:-

Fram P.PG-
Weat 100- semos del fund
Suow 300 e aro demming
566 W 340 to $11 .-25^{3} 3^{2}-\mathrm{W}$






Var. $0^{2} t^{\prime}$
Max. 7: Tue $\quad$ M $\quad 69$

$$
\frac{1134}{1134}
$$

$252^{\prime}$
THIS MUST RESURVEYED (COMPASS was N.G.)


TRAVERE OF WALKER BAY TRXCE TRAK $\checkmark$ From C1/4 515-T142-ए31





PI. CAR *26. + Indian Service Road to Pine Pt.



From A. Walker Bay Ti IN + CiAp. 26.


S40/4 W 9.40 oniqum Water tank brs opoi/2 E
$535^{-3 / 4}$ W 7.40

| $59 W$ | 4.56 | $" . \quad . \quad N 41 / 4 E$ |
| :--- | :--- | :--- | :--- |

S/3/4E 2.30

S535/4 W 1.65 To medpeder lipe Walke Bhy







E. Martinson


Gifberinson
W. less
7. Jemuth
$)^{2}$


From 67.00 Narth
West - 20.14 to El/6 line 5ec. 35

South
c. 4.vo Leave lake
e 4.36 set M.
6.59 . M.C. on Lakethelan
6.70 Waters eafe



S88 $16^{\circ} \mathrm{W}$



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2 \cot 2-5125-T 143-1231
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Sec. $24-143.31$

Rood $5+27 \mathrm{~N}$

| $5+37 \mathrm{~S}$ |
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& \text { No \|'N-N! } \\
& C L \\
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& 10^{\circ} 44^{\prime} E-51 / 2 \\
& f 0.00 \\
& \text { M. ohason } \\
& 1188^{\circ} \mathrm{F} 8^{\prime} \mathrm{W} \\
& 3 \frac{30}{2} \\
& 84^{2} \\
& \frac{8.53}{8} \\
& \text { Rue Boben } \\
& \text { Cindruster } \\
& \begin{array}{c}
8.3 \\
\frac{1.515}{41} 5 \\
\frac{43}{83} \\
\frac{8.674}{4}
\end{array}
\end{aligned}
$$


$7144 \times 30$
See.5-
N. haie
$3+4=$
$\begin{array}{cccc}\text { Foichcones 31. Li.i } & \text { r } \\ ; & 4 & 4 & 4 \\ 4 & 4 & 3\end{array}$
K+W\& $\sec f$

$$
\eta+5 \ll \cdot 4
$$

$\operatorname{Sec} 2 \cdot \operatorname{selton}$

