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# KEUFFEL & ESSER CO.

DRAWING MATERIALS  
AND  
SURVEYING INSTRUMENTS.  
NEW YORK.

CHICAGO. ST. LOUIS. SAN FRANCISCO. MONTREAL.

TABLE FOR EXCAVATIONS AND EMBANKMENTS.

DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.  
ROADWAY 18 FEET WIDE. SIDE SLOPES 1 TO 1.  
FOR SINGLE TRACK EXCAVATION.

"Copyright, 1895, by Keuffel & Esser Co."

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0	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	0
1	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	1
2	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9	2
3	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9	3
4	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9	4
5	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9	5
6	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9	6
7	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	7
8	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9	8
9	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9	9
10	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9	10
11	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9	11
12	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9	12
13	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9	13
14	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9	14
15	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9	15
16	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9	16
17	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9	17
18	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9	18
19	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9	19
20	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9	20
21	30.0	30.1	30.2	30.3	30.4	30.5	30.6	30.7	30.8	30.9	21
22	31.0	31.1	31.2	31.3	31.4	31.5	31.6	31.7	31.8	31.9	22
23	32.0	32.1	32.2	32.3	32.4	32.5	32.6	32.7	32.8	32.9	23
24	33.0	33.1	33.2	33.3	33.4	33.5	33.6	33.7	33.8	33.9	24
25	34.0	34.1	34.2	34.3	34.4	34.5	34.6	34.7	34.8	34.9	25
26	35.0	35.1	35.2	35.3	35.4	35.5	35.6	35.7	35.8	35.9	26
27	36.0	36.1	36.2	36.3	36.4	36.5	36.6	36.7	36.8	36.9	27
28	37.0	37.1	37.2	37.3	37.4	37.5	37.6	37.7	37.8	37.9	28
29	38.0	38.1	38.2	38.3	38.4	38.5	38.6	38.7	38.8	38.9	29
30	39.0	39.1	39.2	39.3	39.4	39.5	39.6	39.7	39.8	39.9	30
31	40.0	40.1	40.2	40.3	40.4	40.5	40.6	40.7	40.8	40.9	31
32	41.0	41.1	41.2	41.3	41.4	41.5	41.6	41.7	41.8	41.9	32
33	42.0	42.1	42.2	42.3	42.4	42.5	42.6	42.7	42.8	42.9	33
34	43.0	43.1	43.2	43.3	43.4	43.5	43.6	43.7	43.8	43.9	34
35	44.0	44.1	44.2	44.3	44.4	44.5	44.6	44.7	44.8	44.9	35
36	45.0	45.1	45.2	45.3	45.4	45.5	45.6	45.7	45.8	45.9	36

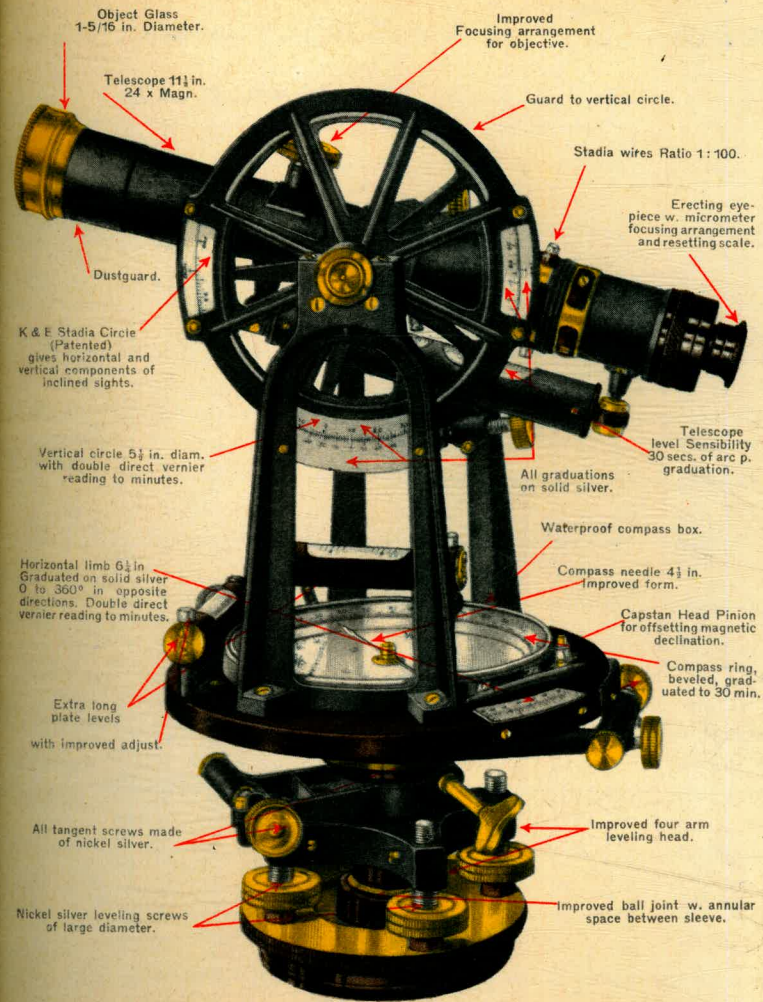
Calculated by Julian A. Hall, M. Am. Soc. C. E.

463

MICROFILMED  
SERIALS ACQUISITION  
JAN 13 1965



**EXTRA FINE ENGINEERS' TRANSIT  
No. 5060 S  
KEUFFEL & ESSER CO., N.Y.**



**ALSO MADE WITH  
INTERNAL FOCUSING TELESCOPE  
PRACTICALLY DUST AND MOISTURE PROOF.**

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EL CAPITAN DAM

Computations for final Rock Embankment

from N 3510 to H 3730

P. 1 to 78

Cont. from 462



3/15/34  
J.W.V.N3510  
UPSTREAM  
Bottom  
Elev.

East	Top Elev.	Bottom Elev.	Ht.	Mean Dist. Ht.	Area Sq. ft.
From 651.5 to 702.2					$\frac{89.9 + 43.5}{2} \times 50.7 = 3381.7$ □
" 626.2 to 651.5					$\frac{122.9 + 99.9}{2} \times 25.3 = 2818.4$ □
" 600.7 to 626.2					$\frac{205.3 + 109.4}{2} \times 25.5 = 4012.4$ □
" 575.5 to 600.7					$\frac{323 + 215.3}{2} \times 25.2 = 6782.6$ □
			Ht.	Mean Dist. Ht.	Area Sq. ft.
5133.2	549.1	549.1	0.0		
				$3.5 \times 68 = 214$	
40	54.3	48.0	6.3		
50	62.0	48.0	14.0	$27.8 \times 10 = 2780$	
60	69.7	48.4	21.3		
				$24.05 \times 7.65 = 184.0$	
67.65	575.5	48.7	26.8		
				$26.75 \times 2.35 = 62.9$	
80	75.5	48.8	26.7		
90	75.5	48.6	26.9		
5200	75.5	48.7	26.8		
10	75.5	48.8	26.7		
20	75.5	48.9	26.6		
30	575.5	548.8	26.7		
	✓	✓	✓	✓	✓

183243

East

N3510

U.S.

East	U.S.	Ht.	Mean Ht.	Dist.	Area in Sq. ft.
5240	575.5	548.6	26.9		
50	75.5	49.0	26.5		
60	75.5	53.9	21.6		
70	75.5	49.4	26.1		
80	75.5	49.9	25.6		
90	75.5	49.8	25.7		
5300	75.5	49.8	25.7	$611.5 \times 10 = 6114.5$	
10	75.5	50.3	25.2		
20	75.5	51.9	23.6		
30	75.5	51.9	23.6		
40	75.5	51.7	23.8		
50	75.5	52.5	23.0		
60	75.5	52.2	23.3		
70	75.5	52.0	23.5		
80	75.5	52.1	23.4		
90	75.5	52.6	22.9		
5400	75.5	52.2	23.3		
10	75.5	53.7	21.8		
20	75.5	56.1	19.4		
30	575.5	556.5	19.0		
	✓	✓	✓	✓	✓



East	H 3510 U.S.	Ht.	Mean Dist. Ht.	Area in sq. ft.
5440	575.5	556.8	18.7	
50	75.5	51.5	24.0	
60	75.5	51.4	24.1	
70	75.5	52.8	22.7	
80	75.5	51.6	23.9	$185.4 \times 10 = 1854.0$
90	75.5	50.0	25.5	
5500	75.5	44.7	20.8	
70	575.5	43.1	32.4	
				$32.4 \times 3.5 = 113.4$
13.5 Vert.	575.5	543.1	32.4	$25,623.3^A$
<hr/> above U.S. Toe Wall				
5517.5	575.0	575.0	0.0	
				$1455 \times 10.9 = 158.6$
28.4	71.6	42.5	29.1	
				$28.9 \times 1.4 = 40.5$
↓ 29.8	↘ 71.2	42.5	28.7	
↑ 29.8	↗ 71.2	43.9	27.3	
				$22.65 \times 10.2 = 231.0$
40	68.0	50.0	18.0	
50	564.8	552.9	11.9	$22.05 \times 10 = 220.5$

East above U.S. Toe wall.	H 3510 U.S.	Ht.	Mean Dist. Ht.	Area in sq. ft.	2
5560	561.6	559.3	2.3		
					$1.15 \times 4.6 = 5.3$
64.6	560.1	560.1	0.0		
					$655.9^A$
<hr/> East. N 3520 Below U.S. Toe Wall D.S.					
4387	540.1	540.1	0.0		
					$2.9 \times 3 = 8.7$
90	41.0	35.2	5.8		
					$8.75 \times 10 = 87.5$
4400	441	32.4	11.7		
05	545.6	533.7	11.9	$22.15 \times 5 = 110.8$	



East  
below D.S. Toe Wall

N 3520

D.S.

Ht.

Mean Dist. area in  
sq. ft.

4410	547.2	538.4	88
20	50.3	38.7	11.6
30	53.5	38.4	15.1
40	56.6	38.0	18.6
50	59.8	37.3	22.5
60	63.0	37.2	25.8
70	66.1	37.1	29.0
80	69.3	37.0	32.3

$143.15 \times 10 = 1431.5$

$33.05 \times 4.6 = 152.0$

84.6	570.8	37.0	33.8
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$16.9 \times 13.4 = 226.5$   
 $2017.0$

98	575.0	575.0	0.0
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4502	575.3	538.0	37.3
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$37.2 \times 8 = 297.6$

10	75.3	38.2	37.1
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20	75.3	38.9	36.4
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30	75.3	41.7	33.6
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40	575.3	544.3	31.0
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✓ ✓ ✓ ✓

1328494

East

N 3520

D.S.

Ht.

Mean Dist. area in  
sq. ft.

3

4550	575.3	548.2	27.1
60	75.3	52.4	22.7
70	75.3	53.3	22.0
80	75.3	54.7	20.6
90	75.3	56.3	19.0
4600	75.3	54.4	20.9
10	75.3	54.6	20.7
20	75.3	55.7	19.6
30	75.3	55.0	20.3
40	75.3	55.0	20.3
50	75.3	54.4	20.9
60	75.3	57.5	23.8
70	75.3	51.9	23.4
80	75.3	53.7	21.6
90	75.3	54.9	21.4

4700	575.3	54.5	20.8
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$20.75 \times 1.6 = 33.2$

01.62	575.3	54.6	20.7
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$16.7 \times 8.4 = 140.3$

10	566.9	554.2	12.7
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$7.75 \times 10 = 77.5$

✓ ✓ ✓







East	N3520 U.S.		Ht.	Mean Dist.	Area in sq. ft.
5230	575.5	548.3	27.2		
40	75.5	48.9	26.6		
50	75.5	49.2	26.3		
60	75.5	51.0	24.5		
70	75.5	49.8	25.7		
80	75.5	49.7	25.8		
90	75.5	49.8	25.7		
5300	75.5	49.8	25.7		
10	75.5	50.3	25.2		
20	75.5	50.7	24.8		
30	75.5	51.0	24.5		
40	75.5	51.5	24.0		
50	75.5	51.7	23.8		
60	75.5	51.5	24.0		
70	75.5	51.5	24.0		
80	75.5	51.2	24.3		
90	75.5	52.0	23.5		
5400	75.5	51.5	24.0		
10	575.5	551.2	24.3		

$$704.3 \times 10 = 7043.0$$

East	N3520 U.S.		Ht.	Mean Dist.	Area in sq. ft.
5420	575.5	554.0	21.5		
30	75.5	52.7	22.8		
40	75.5	51.8	23.7		
50	75.5	50.5	25.0		
60	75.5	51.2	24.3		
70	75.5	50.0	25.5		
80	75.5	49.4	26.1		
90	75.5	44.2	31.3		
5500	575.5	42.1	33.4		
Trawl 10.5	575.5	538.6	36.9		
5514.5	575.0	575.0	0.0		
27	71.1	40.0	31.1		
30	70.1	41.0	29.1		
40	67.0	47.2	19.8		
45	565.4	550.0	15.4		

$$35.15 \times 10.5 = 369.1$$

$$26314.54'$$

$$15.55 \times 12.5 = 194.4$$

$$30.1 \times 3 = 90.3$$

$$24.45 \times 10 = 244.5$$

$$31.4 \times 5 = 157.0$$



East	N3520 U.S.		Ht.	Mean Ht.	Dist.	Area in Sq. ft.
5550	563.8	551.6	12.2	7.8	$7.8 \times 10 = 78.0$	
60	60.6	57.2	3.4		$1.7 \times 68 = 11.6$	
66.8	558.4	558.4	0.0		<del>775.8<sup>a</sup></del>	

East.	N3530		Ht.	Mean Ht.	Dist.	Area in Sq. ft.
below D.S. Toe Wall	D.S.					
4410	546.0	533.3	12.7			
20	49.2	38.4	10.8			
30	52.4	38.1	14.3			
40	55.6	37.7	17.9			$160 \times 10 = 1600.0$
50	58.8	37.3	21.5			
60	62.0	35.9	26.1			
70	65.2	36.2	29.0			
80	68.5	36.2	32.3			
						$33.58 \times 7.2 = 241.6$
87.2	70.8	36.0	34.8			
						$17.4 \times 13.3 = 231.4 \checkmark$
4500.5	575.0	575.0	0.0			$2075.1 \checkmark$

East.	N3530		Ht.	Mean Ht.	Dist.	Area in Sq. ft.
below D.S. Toe Wall	D.S.					
4388.3	539.3	39.3	0.0			
					$1.25 \times 1.7 = 2.1$	
90	39.8	37.3	2.5			
4400	542.9	532.6	10.3			

4504.6	575.5	538.8	36.7			$36.7 \times 5.4 = 198.2$
10	75.5	38.8	36.7			
20	75.5	39.8	35.7			$105.95 \times 10 = 1059.5$
30	75.5	41.1	34.4			
40	575.5	540.5	35.0			



East	N3530 D.S.		Ht.	Mean Dist.	Area in sq. ft.
4550	575.5	542.1	33.4		
60	75.5	45.2	30.3		
70	75.5	52.1	23.4		
80	75.5	53.4	22.1		
90	75.5	52.1	23.4		
4600	75.5	53.8	21.7		
10	75.5	53.0	22.5		
20	75.5	53.3	22.2		
30	75.5	52.1	23.4		
40	75.5	53.0	22.5		
50	75.5	50.5	25.0		
60	75.5	46.9	28.6		
70	75.5	46.6	28.9		
80	75.5	49.2	26.3		
90	75.5	51.9	23.6		
4700	575.5	553.1	22.4		
					$22.35 \times 1.4 = 31.3$
014	575.5	53.2	22.3		
					$17.65 \times 8.6 = 151.8$
10	566.9	553.9	13.9		

East	N3530 D.S.		Ht.	Mean Dist.	Area sq. ft.
4720	556.9	553.7	3.2		$8.1 \times 10 = 81.0$
					$1.6 \times 3.2 = 5.1$
23.2	553.7	553.7	0.0		
From	575.5 to 600.8				$\frac{184.5 + 84.2}{2} \times 25.3 = 3399.1$ sq'
"	600.8 to 651.4				$\frac{75 + 60}{2} \times 50.6 = 3415.5$ sq'
"	651.4 to 702.2				$\frac{50 + 40}{2} \times 50.8 = 2286.0$ sq'
					14,687.5 sq'



East	N3530 U.S			
From 651.50 to	702.2 =	$\frac{89.9+43.5}{2} \times 50.7 =$	3381.7 #	
" 626.2 to	651.5 =	$\frac{123+99.9}{2} \times 25.3 =$	2819.7 #	
" 600.8 to	626.2 =	$\frac{205.1+109.5}{2} \times 25.4 =$	3995.4 #	
" 575.5 to	600.8 =	$\frac{323+215.1}{2} \times 25.3 =$	6807.0 #	
		Ht. Mean Dist. Area in Ht. Ht. Sq. ft.		
5133.1	549.0	549.0	0.0	
			$28 \times 6.9 = 19.3$	
40	54.3	48.7	5.6	
50	62.0	48.2	$138 \times 2.74 \times 10 = 274.0$	
60	69.7	48.1	21.6	
			$74.3 \times 7.65 = 185.9$	
67.65	575.5	548.5	27.0	
			$27 \times 2.35 = 63.4$	
70	75.5	48.5	27.0	
80	75.5	48.7	26.8	
90	75.5	48.8	26.7	
5200	75.5	48.7	26.8	
10	75.5	48.7	26.8	
20	575.5	548.6	26.9	

East	N3530 U.S			Ht. Mean Dist. Area in Ht. Ht. Sq. ft.	8
5200	575.5	548.7	26.8		
40	75.5	48.7	26.8		
50	75.5	48.9	26.6		
60	75.5	49.2	26.3		
70	75.5	49.6	25.9		
80	75.5	50.0	25.5		
90	75.5	50.6	24.9		$606.35 \times 10 = 6063.5$
5300	75.5	51.7	23.8		
10	75.5	51.7	23.8		
20	75.5	52.4	23.1		
30	75.5	51.7	23.8		
40	75.5	51.7	23.8		
50	75.5	51.6	23.9		
60	75.5	51.2	24.3		
70	75.5	51.2	24.3		
80	75.5	51.4	24.1		
90	75.5	51.1	24.4		
5400	75.5	50.9	24.6		
10	575.5	551.2	24.3		



East	N3530 U.S.		Ht.	Mean Dist.	Area in Sq. Ft.
5420	575.5	552.9	22.6		
30	75.5	50.2	25.3		
40	75.5	50.0	25.5	$147.55 \times 10 = 1475.5$	
50	75.5	50.4	25.1		
60	75.5	51.1	24.4		
70	75.5	50.5	25.0		
75	75.5	50.0	25.5	$52.65 \times 5 = 263.2$	
80	75.5	46.2	29.3		
90	75.5	41.1	34.4	$67.05 \times 10 = 670.5$	
5500	575.5	39.5	36.0		
				$36 \times 7.7 = 277.2$	
5507.7	575.5	539.5	36.0	$26,296.3$	
<u>Above U.S. Toe Wall</u>					
5511.9	575.0	575.0	00		
				$15.8 \times 12.1 = 191.2$	
24	71.1	39.5	31.6		
				$31.5 \times 0.6 = 18.9$	
246	570.9	539.5	31.4	$30.45 \times 5.4 = 164.4$	

East	N3530 U.S.		Ht.	Mean Dist.	Area in Sq. Ft.
5530	569.2	539.7	27.5		
40	66.0	43.5	22.5		
50	62.8	50.0	12.8	$50.75 \times 10 = 507.5$	
60	59.6	58.2	1.4		
				$0.7 \times 3 = 2.1$	
63	558.6	558.6	00		
				$884.1$	



East		N3540			
Below D.S. To Wall		D.S.			
Ht.	Mean Dist.	Area in Sq. Ft.	Ht.	Mean Dist.	Area in Sq. Ft.
54	4390	538.7	537.5	1.2	
					$385 \times 4 = 15.4$
94	39.9	33.4	6.5		
					$9.1 \times 11 = 100.1$
4405	43.5	31.8	11.7		
10	45.0	33.0	12.0		
					$31.8 \times 5 = 159.0$
15	46.6	37.8	8.8		
20	48.2	37.9	10.3		
55	30	51.5	37.8	13.7	
	40	54.7	37.8	16.9	
55	50	57.9	35.1	22.8	$128.8 \times 10 = 1288.0$
960	60	61.1	35.4	25.7	
55	70	64.3	35.6	28.7	
	80	67.6	35.9	31.7	
					$33.15 \times 9.1 = 301.7$
	89.1	570.5	535.9	34.6	
	89.1	570.5	537.0	33.5	
					$33.68 \times 0.9 = 30.3$

Below D.S. To Wall		N3540			
D.S.		D.S.			
Ht.	Mean Dist.	Area in Sq. Ft.	Ht.	Mean Dist.	Area in Sq. Ft.
4490	570.8	537.0	33.8		
					$16.9 \times 13 = 219.7$
4503	575.0	575.0	0.0		
					$2114.2^{\square}$
4507	575.5	537.9	37.6		
					$37.6 \times 3 = 112.8$
10	75.5	37.9	37.6		
20	75.5	39.2	36.3		
30	75.5	39.1	36.4		
40	75.5	38.8	36.7		
50	75.5	39.5	36.0		
60	75.5	40.2	35.3		
70	75.5	41.0	34.5		$407.5 \times 10 = 4077.5$
80	75.5	42.2	33.3		
90	75.5	42.1	33.4		
4600	75.5	43.2	32.3		
10	75.5	45.0	30.5		
20	75.5	45.8	29.7		
30	575.5	546.4	29.1		



East	N3540		Ht.	Mean Dist.	Area in
	D.S.		Ht.	Ht.	Sq. Ft.
54	4640	575.5	547.7	27.8	
	50	75.5	44.4	31.1	
	60	75.5	45.6	29.9	
	70	75.5	45.3	30.2	
	80	75.5	47.2	28.3	
	90	75.5	47.3	28.2	
4700	575.5	51.0	24.5		

$$202.3 \times 10 = 2023.0$$

$$24.55 \times 1.4 = 34.4$$

01.42 575.5 50.9 24.6

$$20.5 \times 8.6 = 176.3$$

10 566.9 50.5 16.4

$$10.95 \times 10 = 109.5$$

55 20 56.9 51.4 5.5

$$2.75 \times 5.7 = 15.7$$

55 25.7 551.2 551.2 0.0

From 575.5 to 600.8 =  $\frac{184.5 + 84.2}{2} \times 25.3 = 3399.1$

" 600.8 to 651.4 =  $\frac{75 + 60}{2} \times 50.6 = 3415.5$

" 651.4 to 702.2 =  $\frac{50 + 40}{2} \times 50.8 = 2286.0$

$$15,649.8$$

East.

N3540  
11.5

From 651.5 to 702.2 = 3381.7'

" 626.2 to 651.5 = 2218.4'

" 600.8 to 626.2 = 3995.4'

" 575.5 to 600.8 = 6807.4'

Ht.	Mean Dist.	Area in
Ht.	Ht.	Sq. Ft.
5733.2	549.1	549.1
0.0		
		$2.6 \times 6.8 = 17.7$
40	54.3	49.1
		5.2
50	562.0	548.8
		13.2
		$2665 \times 10 = 2665.0$

5733.2 549.1 549.1 0.0

$$2.6 \times 6.8 = 17.7$$

40 54.3 49.1 5.2

50 562.0 548.8 13.2 2665.0 = 2665.0



East	N3540 U.S.			Ht.	Mean Dist.	Area in 59 ft.
54	5160	5697	548.2	21.5 <sup>x</sup>		
					$245 \times 765 = 187.4$	
	67.65	575.5	548.0	27.5		
					$275 \times 1235 = 339.6$	
	80	575.5	48.0	27.5		
	90	"	48.3	27.2		
	5200	"	48.7	26.8		
	10	"	48.7	26.8		
	20	"	48.8	26.7		
	30	"	48.9	26.6		
	40	"	48.8	26.7		
5	50	"	49.3	26.2		
	60	"	49.8	25.7		
5	70	"	50.0	25.5		
	80	"	50.2	25.3		
5	90	"	50.5	25.0		
	5300	"	51.5	24.0		
	10	"	51.5	24.0		
	20	575.5	551.7	23.8		

East	N3540. U.S.			Ht.	Mean Dist.	Area in 59 ft.
	5330	575.5	552.1	23.4		
	40	"	51.4	24.1		
	50	"	51.3	24.2	$835.4 \times 10 = 8354.5$	
	60	"	51.1	24.4		
	70	"	50.6	24.9		
	80	"	50.7	24.8		
	90	"	50.4	25.1		
	5400	"	50.4	25.1		
	10	"	49.7	25.8		
	20	"	49.7	25.8		
	30	"	49.8	25.7		
	40	"	49.8	25.7		
	50	"	50.0	25.5		
	60	"	50.4	25.1		
	70	"	50.6	24.7		
	80	"	49.1	24.4		
	90	"	39.1	36.4		
	5500	"	39.3	36.2 <sup>x</sup>		
					$36.2 \times 5.2 = 188.2$	
					$20,356.4$	



East  
Above U.S. Toe Wall

N3540  
U.S.

March 17, 34

Ht. Mean Dist. Area in  
59 ft.

5509.3 575° 575° 0.0

$$15.6 \times 12.1 = 188.8$$

21.4 71.2 40.0 31.2

$$30.1 \times 8.6 = 258.9$$

30 68.4 39.4 29.0

40 65.1 43.0 22.1

$$49.0 \times 10 = 490.0$$

50 61.9 50.0 11.9

60 58.7 57.8 9

$$0.45 \times 2 = 0.9$$

62 558.1 558.1 0.0

$$938.6^{\circ}$$

East

N3550  
D.S.

13

below D.S. Toe Wall

Ht. Mean Dist. Area in  
59 ft.

4390.9 538.1 538.1 0.0

$$3.7 \times 4.1 = 15.2$$

95 39.4 32.0 7.4

$$8.2 \times 5 = 41.0$$

4400 41.0 32.0 9.0

10 44.1 32.0 12.1

20 47.3 37.5 9.8

30 50.6 37.6 13.0

40 53.9 37.6 16.3

$$177.2 \times 10 = 1772.0$$

50 57.1 36.4 20.7

60 60.4 35.7 24.7

70 63.6 35.9 27.7

80 66.8 35.5 31.3

90 70.0 35.8 34.2

$$34.5 \times 1.5 = 51.7$$

91.5 70.5 35.8 34.7

91.5 70.5 37.0 33.5

$$33.6 \times 0.5 = 16.8$$

92 70.7 37.0 33.7

$$16.85 \times 13.8 = 232.5$$

Toe Wall 8  
4505.8 575.0 575.0 0.0

$$2129.2^{\circ}$$



East	N3550 D.S.		Ht.	Mean Dist. Ht.	Area in Sq. Ft.
Top wall face 4509.2	575.5	536.1	39.4		
				$38.75 \times 10.8 =$	418.5
20	575.5	37.4	38.1		
30	"	37.9	37.6		
40	"	38.2	37.3		
50	"	38.0	37.5		
60	"	38.0	37.5		
70	"	37.8	37.7		
80	"	37.9	37.6		
90	"	37.8	37.7		
4600	"	37.6	37.9		
10	"	37.3	38.2		
20	"	37.9	37.6		
30	"	37.8	37.7	$641.35 \times 10 =$	6413.5
40	"	38.0	37.5		
50	"	39.0	36.5		
60	"	45.3	30.2		
70	"	45.8	29.7		
80	575.5	545.7	29.8		

East	N3550 D.S.		Ht.	Mean Dist. Ht.	Area in Sq. Ft.
4690	575.5	545.8	29.7		
4700	"	46.3	29.2		
				$29.15 \times 1.4 =$	40.8
01.4	575.5	46.4	29.1		
				$24.35 \times 8.6 =$	209.4
10	66.9	47.3	19.6		
20	56.9	48.2	8.7	$18.45 \times 10 =$	186.5
30	46.9	46.6	0.3		
				$0.15 \times 0.2 =$	.03
30.2	546.7	546.7	0.0		
From	575.5 to 600.8	$= \frac{104.5 + 84.2}{2} \times 25.3 =$	3399.1	sq'	
	600.8 to 651.4	$= \frac{75 + 60}{2} \times 50.6 =$	3415.5	sq'	
	651.4 to 702.2	$= \frac{50 + 40}{2} \times 50.8 =$	2286	sq'	
			16369.6	sq'	



East N3550  
U.S.

From 651.5 to 702.2 =  $\frac{89.9+43.5}{2} \times 50.7 = 3381.7$

" 626.2 to 651.5 =  $\frac{123.+ 99.9}{2} \times 25.3 = 2819.7$

" 600.8 to 626.2 =  $\frac{205.1+109.5}{2} \times 25.4 = 3995.5$

" 575.5 to 600.8 =  $\frac{323.+ 215.1}{2} \times 25.3 = 6807.00$

	Ht.	Mean Dist.	Area in Sq. Ft.
5133.2	549.2	549.2	0.0
			$2.6 \times 6.8 = 10.9$
40	54.3	49.1	5.2
50	62.0	48.7	13.3 $26.55 \times 10 = 265.5$
60	69.7	48.4	21.3
5167.65	575.5	48.2	27.3 $24.3 \times 7.65 = 185.9$ $27.3 \times 2.35 = 64.2$
70	75.5	48.2	27.3
80	75.5	47.7	27.8
90	75.5	48.1	27.4
5200	75.5	48.1	27.4
10	575.5	548.4	27.1

East N3550  
U.S. J.W.W. July 14 1934 15

Ht.	Mean Dist.	Area in Sq. Ft.
5220	575.5	548.6
30	"	49.4
40	"	49.5
50	"	49.5
60	"	49.9
70	"	50.7
80	"	50.8
90	"	51.0
5300	"	51.6
10	"	51.1
20	"	52.2
30	"	51.9
40	"	51.3
50	"	51.0
60	"	50.2
70	"	49.5
80	"	49.0
90	"	48.8
5400	575.5	548.8

589.1 x 10 = 5891.0



East		N3550 U.S.		Ht.	Mean Ht.	Dist	Area in Sq. Ft.
5410	575.5	549.1	26.4				
20	"	49.3	26.2				
30	"	49.7	25.8				
40	"	50.1	25.4				
50	"	50.1	25.4		204.25 x 10 =	2842.5	
60	"	50.4	25.1				
70	"	48.8	26.7				
80	"	41.5	34.0				
90	"	37.8	37.7				
5500	"	39.1	36.4				
					368 x 2.8 =	103.0	
Wall 028	575.5	538.3	37.2			26,367.8 <sup>sq</sup>	
above U.S. Toe Wall							
5507	575.0	575.0	0.0				
					15.55 x 11.9 =	185.0	
18.9	71.1	40.0	31.1				
					30.95 x 1.1 =	34.0	
20	70.8	40.0	30.8				
20	570.8	538.5	32.3				

East		N3550 U.S.		Ht	Mean Ht.	Dist	Area in Sq. Ft.
5530	567.5	538.9	28.6				
40	64.3	41.5	22.8		83.25 x 10 =	832.5	
50	61.0	46.8	14.3				
60	57.8	54.8	3.0				
					1.5 x 2.9 =	4.4	
62.9	556.9	556.9	0.0				
							1055.9 <sup>sq</sup>



3/17/34

East		N3560			
Below D.S. Top Wall	D.S.	Ht	Mean Dist	Area in	
			Ht	Sq. Ft.	
4392.8	538.4	538.4	0.0		
				$3.2 \times 4.2 = 13.4$	
97	39.1	32.7	6.4		
4405	41.8	31.4	10.4	$19.5 \times 8 = 156.0$	
15	45.0	33.2	11.8		
				$10.8 \times 5 = 54.0$	
20	46.6	36.8	9.8		
30	49.8	37.5	12.3		
40	53.1	37.2	15.9		
50	56.4	36.6	19.8	$151.7 \times 10 = 1517.0$	
60	59.7	35.9	23.8		
70	63.0	35.7	27.3		
80	66.2	35.5	30.7		
90	69.5	35.5	34.0		
				$34.4 \times 3.5 = 120.4$	
93.5	70.7	35.9	34.8		
				$34.3 \times 0.5 = 17.2$	
94	570.8	537.0	33.8	$16.9 \times 13 = 219.7$	

17

East		N3560			
	D.S.	Ht	Mean Dist	Area in	
			Ht	Sq. Ft.	
4507	575.0	575.0	0.0		$2253.9 \checkmark$
1511	575.6	535.9	39.7		
				$39.6 \times 9 = 356.4$	
20	75.6	36.1	39.5		
30	"	36.8	38.8		
40	"	37.0	38.6		
50	"	36.7	38.9		
60	"	36.9	38.7		
70	"	37.0	38.6		
80	"	36.9	38.7		
90	"	36.9	38.7	$541.5 \times 10 = 5415.0$	
4600	"	36.9	38.7		
10	"	36.9	38.7		
20	"	37.0	38.6		
30	"	37.1	38.5		
40	"	37.1	38.5		
50	"	37.1	38.5		
60	575.6	537.1	38.5		



East	N3560 0.5		Ht.	Mean Dist.	Area in Sq. ft.
4670	575.6	545.0	30.6		
80	"	45.5	30.1	$125.25 \times 10 =$	$1252.5$
90	"	45.3	30.3		
4700	575.6	45.6	30.0		
				$30 \times 1.3 =$	$39.0$
01.3	575.6	45.6	30.0		
				$25.7 \times 8.7 =$	$223.6$
10	66.9	45.5	21.4		
20	56.9	45.5	11.4	$22.75 \times 10 =$	$227.5$
30	46.9	45.6	1.3		
				$0.65 \times 1 =$	$0.6$
31	545.9	545.9	0.0		

From	575.6 to 600.9	$= \frac{184.4 + 84.1}{2} \times 25.3 =$	$3396.5$
"	600.9 to 651.5	$= \frac{75 + 60}{2} \times 50.6 =$	$3415.5$
"	651.5 to 702.2	$= \frac{50 + 40}{2} \times 50.7 =$	$2281.5$
			$16,608.5$

East	N3560 4.5		Ht.	Mean Dist.	Area in Sq. ft.
Anom	651.5 to 702.2	$= \frac{84.9 + 43.5}{2} \times 50.7 =$			$3381.7$
"	626.2 to 651.5	$= \frac{123.4 + 99.9}{2} \times 25.3 =$			$2819.7$
"	600.9 to 626.2	$= \frac{205.1 + 109.5}{2} \times 25.4 =$			$3995.4$
"	575.6 to 600.9	$= \frac{322.9 + 215.1}{2} \times 25.7 =$			$6778.8$

	Ht.	Mean Dist.	Area in Sq. ft.
5123.1	549.6	549.6	0.0
			$2.35 \times 6.1 =$
			$14.3$
40	543	49.6	4.7
50	62.0	44.0	13.0
			$25.9 \times 10 =$
			$259.0$
60	69.7	48.6	21.1
			$24.15 \times 7.8 =$
			$188.4$
67.8	575.6	48.4	27.2
			$27.25 \times 2.2 =$
			$60.0$
70	575.6	548.3	27.3



East	N3560 U.S.		Ht.	Mean Dist.	Area in Sq. Ft.
5180	575.6	548.0	27.6		
90	575.6	47.9	27.7		
5200	"	48.2	27.4		
10	"	48.3	27.3		
20	"	48.6	27.0		
30	"	49.1	26.5		
40	"	49.2	26.4		
50	"	49.5	26.1		
60	"	50.0	25.6		
70	"	50.2	25.4		
80	"	50.7	24.9		
90	"	51.0	24.6		
5300	"	51.2	24.4		
10	"	51.4	24.2		
20	"	51.7	23.9		
30	"	51.8	23.8	$847.5 \times 10 = 8475.0$	
40	"	51.1	24.5		
50	"	50.9	24.7		
60	575.6	549.9	25.7		

East	N3560 U.S.		Ht.	Mean Dist.	Area in Sq. Ft.
5370	575.6	549.3	26.3		
80	"	48.9	26.7		
90	"	48.6	27.0		
5400	"	48.9	26.7		
10	"	49.2	26.4		
20	"	49.5	26.1		
30	"	49.6	26.0		
40	"	49.9	25.7		
50	"	50.5	25.1		
60	"	50.8	24.8		
70	"	45.1	30.3		
80	"	34.5	36.1		
90	575.6	38.1	37.5		
5500.7	575.6	537.8	27.8		$32.65 \times 10.7 = 349.3$ $26,321.6$
5504.8	575.0	575.0	0.0		
16.7	571.2	540.0	31.2		$15.6 \times 11.9 = 185.6$ $31.0 \times 1.1 = 34.1$

Top Wall

Above U.S. Top Wall







East

N3570  
D.S.

		Ht.	Mean Ht.	Dist.	Area in Sq. Ft.
4530	575.6	538.1	375		
40	"	384	372		
50	"	384	372		
60	"	39.2	364		
70	"	39.8	358		
80	"	39.8	358		
90	"	39.2	364		
4600	"	40.2	354		
10	"	39.2	364	$626.55 \times 10 = 6265.5$	
20	"	39.5	361		
30	"	39.0	366		
40	"	39.7	359		
50	"	40.4	352		
60	"	45.7	299		
70	"	45.4	302		
80	"	45.7	299		
90	"	45.4	302		
4700	"	45.8	298		
				$29.8 \times 1.3 = 38.7$	
01.3	575.6	545.8	298	$25.5 \times 8.7 = 221.8$	

East

N3570  
D.S.

21

		Ht.	Mean Ht.	Dist.	Area in Sq. Ft.
4710	566.9	545.7	21.2		
20	56.9	46.0	10.9	$22.3 \times 10 = 223.0$	
30	46.9	45.3	1.6		
				$0.8 \times 11 = 0.9$	
31.1	545.8	545.8	0.0		

$$\begin{array}{l}
 \text{From } 575.6 \text{ to } 600.9 = \frac{184.4 + 84.1}{2} \times 25.3 = 3396.5 \\
 \text{From } 600.9 \text{ to } 651.5 = \frac{75 + 60}{2} \times 50.6 = 3415.5 \\
 \text{From } 651.5 \text{ to } 702.2 = \frac{50 + 40}{2} \times 50.7 = 2281.5 \\
 \hline
 16135.0
 \end{array}$$



East

N3570  
U.S.

From 651.5 to 702.2 =  $\frac{89.9+43.5}{2} \times 50.7 = 3381.7$  "

" 626.2 to 651.5 =  $\frac{123.1+99.9}{2} \times 25.3 = 2821.0$  "

" 600.8 to 626.2 =  $\frac{205.1+109.5}{2} \times 25.4 = 3395.4$  "

" 575.6 to 600.8 =  $\frac{322.9+215.1}{2} \times 25.2 = 6778.8$  "

			Ht.	Mean Dist.	Area in
			Ht.		Sq. Ft.
5133.8	549.5	549.5	00		
				$245 \times 62 = 15,2$	
40	54.3	49.4	49		
50	62.0	48.8	132	$26.15 \times 10 = 261.5$	
60	69.7	48.7	210		
				$24.1 \times 7.8 = 188.0$	
67.8	595.6	48.4	27.2		
				$27.2 \times 12.2 = 331.8$	
80	575.6	48.4	27.2		
90	"	48.3	27.3		
5200	"	48.2	27.4		
10	"	48.3	27.3		
20	"	48.9	26.7		
30	575.6	549.1	26.5		

East

N3570  
U.S.

22

			Ht.	Mean Dist.	Area in
			Ht.		Sq. Ft.
5240	575.6	549.4	26.2		
50	"	49.5	26.1		
60	"	49.7	25.9		
70	"	50.1	25.5		
80	"	50.3	25.3		
90	"	50.4	25.2		
5300	"	50.4	25.2		
				$620.7 \times 10 = 6207.0$	
10	"	50.6	25.0		
20	"	50.9	24.7		
30	"	50.9	24.7		
40	"	50.9	24.7		
50	"	51.2	24.4		
60	"	50.7	24.9		
70	"	49.2	26.4		
80	"	49.6	26.0		
90	"	49.5	26.1		
5400	"	49.1	26.5		
10	"	49.5	26.1		
20	575.6	549.6	26.0		



East		N3570 U.S		Ht.	Mean Dist.	Area in sq. ft.
5430	575.6	550.2	254			
40	"	50.3	253			
50	"	50.5	251			
60	"	48.3	273		$206.35 \times 10 = 2063.5$	
70	"	42.4	332			
80	"	38.0	376			
90	"	36.7	389			
Toe Wall						
5498.8	575.6	537.4	382		$38.55 \times 8.8 = 339.2$	$25784.0$
Above U.S. Toe Wall						
5502.8	575.0	575.0	0.0			
					$15.6 \times 12 = 187.2$	
14.8	71.1	40.0	312			
					$30.95 \times 1 = 31.0$	
15.8	∇ 70.7	40.0	307			
15.8	∧ 70.7	38.3	324			
					$31.6 \times 42 = 1327$	
20	69.4	38.6	308			
30	66.1	38.0	281		$29.95 \times 10 = 299.5$	
					$27.65 \times 2 = 55.3$	
32	565.4	538.2	272		$23.2 \times 8 = 185.6$	

East		N3570 U.S		Ht.	Mean Dist.	Area in sq. ft.
Above U.S. Toe Wall						
5540	562.8	543.6	192			
50	59.6	50.4	92		$14.2 \times 10 = 142.0$	
					$4.6 \times 9.2 = 42.3$	
592	556.6	556.6	0.0			$1075.6$



East		N3580 D.S.		Mean Dist.	Area in Sq. ft.
below D.S. Toe Wall					
4397	537.7	337.7	0.0		
				$345 \times 3 = 10.4$	
4400	38.7	31.8	6.9		
				$9.35 \times 15 = 140.2$	
15	43.6	31.8	11.8		
				$10.3 \times 5 = 51.5$	
20	45.3	36.5	8.8		
30	48.7	37.3	11.4		
40	52.0	37.3	14.7		
50	55.3	37.0	18.3		
60	58.6	36.0	22.6		
				$142.75 \times 10 = 1427.5$	
70	61.9	36.0	25.9		
80	65.2	36.0	29.2		
90	68.5	36.0	32.5		
				$3385 \times 7.2 = 243.7$	
97.2	70.9	35.7	35.2		
97.2	70.9	37.0	33.9		
				$16.95 \times 12.7 = 215.3$	
4509.9	575.0	575.0	0.0		2088.6

East		N3580 D.S.		Mean Dist.	Area in Sq. ft.
Toe Wall					
4514	575.5	535.9	39.6		
				$3955 \times 6 = 237.3$	
20	575.5	36.0	39.5		
30	"	39.7	35.8		
40	"	43.0	32.5		
50	"	42.8	32.7		
60	"	43.0	32.5		
70	"	42.9	32.6		
80	"	43.0	32.5		
90	"	43.2	32.3		
				$516. \times 10 = 5160.0$	
4600	"	43.0	32.5		
10	"	43.2	32.3		
20	"	43.6	31.9		
30	"	45.1	30.5		
40	"	44.5	31.0		
50	"	44.2	31.3		
60	"	44.8	30.7		
70	"	45.4	30.1		
80	575.5	545.4	30.1		



East	N3580 D.S		Ht	Mean Dist	Area in Sq. ft.
4690	575.5	545.9	29.6	$59.75 \times 10 = 597.5$	
4700	"	45.3	30.2 <sup>x</sup>		
				$30.2 \times 1.4 = 42.3$	
4701.4	575.5	45.3	30.2		
				$25.75 \times 8.6 = 221.4$	
10	66.9	45.6	21.3		
20	56.9	48.0	8.7	$19.85 \times 10 = 198.5$	
30	46.9	46.3	0.6 <sup>x</sup>		
				$0.3 \times 0.4 = 0.1$	
4730.4	546.5	546.5	0.0		
Mean	575.5 to 600.9 =	$\frac{1845 + 841}{2} \times 25.4 =$	3411.2		
"	600.9 to 651.5 =	$\frac{75 + 60}{2} \times 50.6 =$	3415.50		
"	651.5 to 702.2 =	$\frac{50 + 40}{2} \times 50.7 =$	2281.50		
			$15565.7$		

East	N3580 U.S		3/19/34		25
Mean	651.5 to 702.2 =	$\frac{89.9 + 43.5}{2} \times 50.7 =$	3381.7		
"	626.2 to 651.5 =	$\frac{123 + 99.9}{2} \times 25.3 =$	2819.7		
"	600.8 to 626.2 =	$\frac{205.1 + 109.5}{2} \times 25.4 =$	3995.4		
			3996.3		
"	575.5 to 600.8 =	$\frac{322 + 215.1}{2} \times 25.3 =$	6807.0		
	Ht	Mean Dist	Area in Sq. ft.		
5134	549.7	549.7	0.0		
				$24.5 \times 6 = 14.7$	
40	54.3	49.4	4.9		
50	62.0	49.0	13.0	$25.95 \times 10 = 259.5$	
60	69.7	48.7	21.0 <sup>x</sup>		
				$23.95 \times 7.65 = 183.2$	
5167.65	575.5	48.6	26.9		
				$26.9 \times 12.5 = 332.2$	
80	575.5	48.6	26.9		
90	"	48.5	27.0		
5200	"	"	27.0		
10	"	"	27.0	$1343 \times 10 = 1343.0$	
70	"	48.9	26.6		
30	575.5	549.0	26.5 <sup>x</sup>		







East		N3580		Ht.	Mean Dist.	Area in Sq. Ft.
above U.S. Toe Wall		U.S.				
5540	562.2	544.7	17.5	35	$\times 10 = 350.0$	
50	59.0	51.4	7.6		$3.8 \times 7.6 = 28.9$	
57.6	557.5	557.5	0.0			$1076.6$ $\square$ $\checkmark$

East		N3590		Ht.	Mean Dist.	Area in Sq. Ft.
below D.S. Toe Wall		D.S.				
4397.4	537.4	37.4	0.0			
					$3.05 \times 2.6 = 7.9$	
4400	38.3	32.2	6.1			
					$9.55 \times 20 = 191.0$	
20	544.9	531.9	13.0			

East		N3590		Ht.	Mean Dist.	Area in Sq. Ft.
		D.S.				
4425	546.5	537.0	9.5	21.4	$\times 5 = 107.0$	
30	48.2	37.4	10.8			
40	51.5	37.3	14.2			
50	54.9	36.6	18.3			
60	58.2	36.7	21.5	$127.25 \times 10 = 1272.5$		
70	61.5	36.3	25.2			
80	64.8	37.5	27.3			
90	68.1	37.4	30.7			

						$326 \times 8 = 260.8$
4498	70.7	36.7	34.5			
48	70.7	37.0	33.7			
						$33.8 \times 0.5 = 16.9$
48.5	70.9	37.0	33.9			
						$16.95 \times 12.5 = 211.9$
4511	575.0	75.0	0.0			$20680$ $\square$
<hr/>						
Toe Wall						
4515	575.5	535.9	39.6			
						$39.35 \times 5 = 196.8$
20	575.5	536.4	39.1			



East

N3590  
D.S.

			Ht.	Mean Dist. Ht.	Area in Sq. Ft.
45 30	575.5	539.9	35.6		
40	"	43.2	32.3		
50	"	43.1	32.4		
60	"	42.9	32.6		
70	"	42.7	32.8		
80	"	42.7	32.8		
90	"	42.9	32.6		
4600	"	42.6	32.9		
10	"	42.6	32.9		
20	"	43.1	32.4		
30	"	43.5	32.0		
40	"	44.2	31.3		
50	"	44.6	30.9		
60	"	44.7	30.8		
70	"	45.5	30.0		
80	"	45.5	30.0		
90	"	45.6	29.9		
4700	575.5	45.5	30.0 <sup>x</sup>		
				30 x 1.4 = 42.0	
4701.4	575.5	545.5	30.0		
				2545 x 8.6 = 218.9	

$$5787.5 \times 10 = 57875$$

East

N3590  
D.S.

28

			Ht.	Mean Dist. Ht.	Area in Sq. Ft.
4710	566.9	546.0	20.9		
20	56.9	45.4	11.5	22.8 x 10 = 228.0	
30	46.9	45.2	1.7		
				0.85 x 1 = 0.8	
31	545.9	545.9	0.0		

$$575.5 \text{ to } 600.9 = \frac{184.5 + 84.1}{2} \times 25.4 = 3411.2$$

$$600.9 \text{ to } 651.6 = \frac{75 + 60}{2} \times 50.7 = 3422.3$$

$$651.6 \text{ to } 702.2 = \frac{50 + 40}{2} \times 50.6 = 2277.0$$

$$15584.9$$



East

N3590  
U.S

From 651.5 to 702.2 =  $\frac{89.9 + 43.5}{2} \times 50.7 = 3381.7$   $\square$   
 " 626.2 to 651.5 =  $\frac{123 + 99.9}{2} \times 25.3 = 2819.7$   $\square$   
 " 600.8 to 626.2 =  $\frac{205.1 + 109.5}{2} \times 25.4 = 3945.4$   $\square$   
 " 575.5 to 600.8 =  $\frac{323 + 215.1}{2} \times 25.3 = 6807$   $\square$

	Ht.	Mean Dist.	Area in Sq. ft.
5134.2	549.8	549.8	0.0
			$2.4 \times 5.8 = 13.9$
40	54.3	49.5	4.8
50	62.0	48.9	$131 \times 25.95 \times 10 = 259.5$
60	69.7	48.8	20.9
			$23.9 \times 7.65 = 182.8$
5167.65	575.5	48.6	26.9
			$26.95 \times 2.35 = 63.3$
70	575.5	48.5	27.0
80	"	48.6	26.9
90	"	48.7	26.8
5200	"	48.6	26.9
10	"	48.6	26.9
20	575.5	548.9	26.6

East

N3590  
U.S

5230 575.5 549.1 26.4  
 40 " 49.4 26.1  
 50 " 49.4 26.1  
 60 " 49.4 26.1

	Ht.	Mean Dist.	Area in Sq. ft.
70	"	49.5	26.0
80	"	49.4	26.1
90	"	49.1	26.4
5300	"	49.6	25.9
10	"	49.6	25.9
20	"	49.6	25.9
30	"	49.5	26.0
40	"	49.3	26.2
50	"	49.5	26.0
60	"	48.1	27.4
70	"	47.6	27.9
80	"	47.9	27.6
90	"	47.9	27.6
5400	"	47.7	27.8
10	575.5	548.5	27.0

Ht. Mean Dist. Area in Sq. ft.

$638.5 \times 10 = 6385.0$

4

x



East	N3590 U.S.		Ht.	Mean Dist	Area in sq. ft.
5420	575.5	549.4	26.1		
30	"	51.9	23.6		
40	"	48.5	27.0		
50	"	48.2	27.3	$23555 \times 10 = 2355.5$	
60	"	47.5	28.0		
70	"	42.5	33.0		
80	"	37.5	38.0		
90	575.5	37.4	38.1		
					$38.15 \times 5.6 = 213.6$
Toe Wall					
5495.6	575.5	537.3	38.2		$264783^{\text{sq. ft}}$
<hr/>					
above U.S. Toe Wall					
5499.6	575.0	75.0	0.0		
					$15.55 \times 11.9 = 185.0$
5511.5	71.1	40.0	31.1		
					$30.95 \times 1 = 31.0$
12.5	70.8	40.0	30.8		
12.5	70.8	32.3	32.5		
					$31.65 \times 7.5 = 237.4$
20	568.3	537.5	30.8		
					$297 \times 7 = 207.9$

		N3590 U.S.		Ht.	Mean Dist	Area in sq. ft.
Above U.S. Toe Wall						
5527	566.0	537.4	28.6			
					$27.1 \times 3 = 81.3$	
30	65.0	39.4	25.6			
40	61.7	46.0	15.7	$31.4 \times 10 = 314.9$		
50	58.4	52.6	5.8			
					$2.9 \times 5.8 = 16.8$	
55.8	556.5	556.5	0.0			
					$1073.4^{\text{sq. ft}}$	



East		N3600				
below D.S. Toe Wall		D.S.	Ht.	Mean Dist.	Area in	
				Ht.	Sq. Ft.	
43996	537.9	537.9	0.0			
					$2.5 \times 1.4 = 3.5$	
4401	38.3	33.3	5.0			
					$6.45 \times 4 = 25.8$	
05	39.6	31.7	7.9			
					$10.3 \times 15 = 154.5$	
20	44.6	31.9	12.7			
					$12.65 \times 4 = 50.6$	
24	45.9	33.3	12.6			
					$11.25 \times 4 = 45.0$	
28	47.2	37.3	9.9			
					$12 \times 12 = 144.0$	
40	51.2	37.1	14.1			
50	54.5	36.5	18.0			
60	57.8	36.5	21.3			
					$1139 \times 10 = 1139.0$	
70	61.1	36.4	24.7			
80	64.5	36.9	27.6			
90	67.8	37.3	30.5			
					$324 \times 9 = 291.6$	
99	570.8	536.5	34.3			

East		N3600				
below D.S. Toe Wall		D.S.	Ht.	Mean Dist.	Area in	
				Ht.	Sq. Ft.	
4499	570.8	540.0	30.8			
						$31 \times 12 = 37.2$
4500	71.2	40.0	31.2			
						$15.6 \times 11.7 = 182.5$
11.9	575.0	575.0	0.0			
						$2073.7^{\square}$
4515.9	575.5	536.3	39.2			
						$3905 \times 41 = 160.1$
20	575.5	36.6	38.9			
30	"	36.9	38.6			
40	"	41.1	34.4			
50	"	42.3	33.2			
60	"	42.8	32.7			
70	"	42.7	32.8			$33795 \times 10 = 3379.5$
80	"	42.6	32.9			
90	"	42.9	32.6			
4600	"	42.8	32.7			
10	"	43.0	32.5			
20	575.5	543.3	32.2			



East	N3600			
	D.S.	Ht.	Mean Dist. Ht.	Area in sq. ft.
A630	575.5	543.8	31.7	
40	"	44.3	31.2	
50	"	44.6	30.9	
60	"	45.1	30.4	$2461 \times 10 = 24610$
70	"	45.1	30.4	
80	"	45.2	30.3	
90	"	45.4	30.1	
4700	575.5	45.5	30.0	
				$30 \times 14 = 420$
01.42	575.5	45.5	30.0	
				$25.55 \times 8.6 = 219.7$
10	66.9	45.8	21.1	
20	56.9	46.0	10.9	$221 \times 10 = 2210$
30	46.9	45.6	1.3	
				$0.65 \times 0.8 = 0.5$
30.8	546.1	546.1	0.0	
From	575.5 to 600.9 =	$\frac{184.5 + 84.1}{2} \times 25.4 =$	$\frac{3411.2}{2} =$	$3411.6 \text{ sq. ft.}$
"	600.9 to 651.7 =	$\frac{75 + 60}{2} \times 50.8 =$	$3429 \text{ sq. ft.}$	
"	651.7 to 702.2 =	$\frac{50 + 40}{2} \times 50.5 =$	$2272.5 \text{ sq. ft.}$	

N3600				
D.S.				15596.4'
From	651.5 to 702.3 =	$\frac{89.9 + 43.5}{2} \times 50.8 =$	$3388.4 \text{ sq. ft.}$	
"	626.2 to 651.5 =	$\frac{123 + 99.9}{2} \times 25.3 =$	$2819.7 \text{ sq. ft.}$	
"	600.9 to 626.2 =	$\frac{205.1 + 109.5}{2} \times 25.4 =$	$3995.4 \text{ sq. ft.}$	
"	575.4 to 600.8 =	$\frac{323.2 + 215.1}{2} \times 25.4 =$	$6836.4 \text{ sq. ft.}$	
5134	549.7	549.7	0.0	
				$2.35 \times 6 = 14.1$
40	54.3	49.6	4.7	
50	62.0	49.4	12.6	$25.25 \times 10 = 252.5$
60	569.7	549.1	20.6	$23.6 \times 7.5 = 177.0$



East.	N3600 U.S.		Ht.	Mean Dist	Area in sq. ft.
5167.5	575.4	548.8	26.6		
				$26.6 \times 2.5 =$	66.6
70	575.4	548.7	26.7		
80	"	48.8	26.6		
90	"	48.6	26.8		
5200	"	48.7	26.7		
10	"	48.8	26.6		
20	"	48.8	26.6		
30	"	49.1	26.3		
40	"	49.2	26.2		
50	"	49.4	26.0		
60	"	49.4	26.0		
70	"	49.1	26.3		
80	"	48.6	26.8		
90	"	48.6	26.8		
5300	"	49.2	26.2		
10	"	49.4	26.0		
20	"	49.3	26.1		
30	575.4	549.1	26.3	$877.85 \times 10 =$	8778.5

33

East	N3600 U.S.		Ht.	Mean Dist	Area in sq. ft.
40	575.4	549.3	26.1		
50	"	48.6	26.8		
60	"	48.5	26.9		
70	"	48.1	27.3		
80	"	48.4	27.0		
90	"	47.9	27.5		
5400	"	48.2	27.2		
10	"	48.1	27.3		
20	"	48.5	26.9		
30	"	50.1	25.3		
40	"	51.7	23.7		
50	"	46.7	28.7		
60	"	45.9	29.5		
70	"	41.2	34.2		
80	"	36.7	38.7		
90	575.4	537.2	38.2		
					$38.2 \times 0.67 =$ 25.6
9.67	575.4	537.2	38.2		
Total	5494.35	537.3	38.1		$38.15 \times 3.58 =$ 136.6
					26491.7 <sup>0</sup>



East  
Above U.S. Toe Wall

N3600  
U.S.

			Ht.	Mean Dist.	Area in Sq. Ft.
5498.28	575.0	575.0	0.0		
					$15.55 \times 11.7 = 181.9$
5510	71.1	40.0	31.1		
					$30.9 \times 1.1 = 34.0$
11.1	70.7	40.0	30.7		
11.1	70.7	38.3	32.4		
					$31.5 \times 8.9 = 280.4$
20	67.8	37.2	30.6		
30	64.5	38.2	26.3		
					$57.65 \times 10 = 576.5$
40	61.2	47.2	14.0		
50	57.9	53.8	4.1		
					$2.05 \times 3.1 = 6.4$
53.1	556.9	556.1	0.0		
					$1079.2^A$

East  
Below D.S. Toe Wall

N3610  
D.S.

			Ht.	Mean Dist.	Area in Sq. Ft.
4401.3	538.0	538.0	0.0		
					$3.5 \times 2.7 = 9.4$
04	38.9	31.9	7.0		
					$10.05 \times 19 = 191.0$
73	45.2	32.1	13.1		
					$11.75 \times 5 = 58.8$
28	47.3	36.9	10.4		
					$12.1 \times 12 = 145.2$
40	50.9	37.1	13.8		
50	54.2	36.6	17.6		
60	57.5	37.2	20.3		
70	60.9	37.1	23.8		
					$10935 \times 10 = 1093.5$
80	64.2	37.9	26.3		
90	67.5	38.6	28.9		
					$30.35 \times 9.8 = 302.3$

4499.8 x 570.8 = 538.0 32.8  
 4499.8 x 570.8 = 540.0 30.8  $3095 \times 1 = 31.0$



East		N3610			
below D.S. Toe Wall	D.S.	Ht.	Mean Dist.	Area in sq. ft.	
4500.8	571.1	540.0	31.1		
				$15.55 \times 11.7 = 181.9$	
4512.5	575.0	75.0	0.0		$2013.1^a$
<hr/>					
Toe Wall					
4516.5	575.5	536.6	38.9		
				$38.9 \times 3.5 = 136.2$	
20	75.5	36.6	38.9		
30	"	37.4	38.1		
40	"	39.7	35.8		
50	"	40.9	34.6		
60	"	40.8	34.7		
70	"	40.6	34.9		
80	"	40.9	34.6		
90	"	40.6	34.9		
4600	"	40.7	34.8	$614.6 \times 10 = 6146.0$	
10	"	40.9	34.6		
20	"	40.7	34.8		
30	"	40.5	35.0		
40	575.5	340.8	34.7		

East		N3610				35
	D.S.	Ht.	Mean Dist.	Area in sq. ft.		
4650	575.5	541.2	34.3			
60	"	42.2	33.3			
70	"	45.3	30.2			
80	"	45.1	30.4			
90	"	45.2	30.3			
4700	575.5	545.2	30.3			
				$30.25 \times 1.4 = 42.4$		
01.44	575.5	45.3	30.2			
20				$25.7 \times 8.6 = 221.0$		
10	66.9	45.7	21.2			
20	56.9	45.1	11.8	$23 \times 10 = 230.0$		
30	46.9	45.7	1.2			
				$0.6 \times 0.7 = 0.4$		
4730.7	546.2	546.2	0.0			
From	575.5 to 600.9			$\frac{184.5 + 84.1}{2} \times 25.4 = 3411.2$		
"	600.9 to 651.7			$\frac{75 + 60}{2} \times 50.8 = 3429$		
"	651.7 to 702.2			$\frac{50 + 40}{2} \times 50.5 = 2272.5$		
				$15889.1$		



East

N3610  
U.S

5180	575.5	548.7	26.8
90	"	48.6	26.9
5200	"	48.7	26.8
10	"	48.8	26.7
20	"	48.9	26.6
30	"	48.9	26.6
40	"	49.1	26.4
50	"	49.2	26.3
60	"	48.9	26.6

Ht. Mean Dist Area in  
Ht. 59 ft.

East

N3610  
U.S

From	651.5 to 702.3 = $\frac{89.9+43.5}{2} \times 50.8 = 3388.4$ $\square$
"	626.7 to 651.5 = $\frac{123+99.9}{2} \times 25.3 = 2819.7$ $\square$
"	600.8 to 626.7 = $\frac{205.1+109.5}{2} \times 25.4 = 3995.4$ $\square$ $\frac{3996.5}{2}$
"	575.5 to 600.8 = $\frac{323+215.1}{2} \times 25.3 = 6807$ $\square$

70	"	48.8	26.7
80	"	48.6	26.9
90	"	47.7	27.8
5300	"	48.1	27.4
10	"	48.6	26.9
20	"	48.9	26.6
30	"	48.6	26.9
40	"	48.3	27.2
50	"	47.9	27.6
60	575.5	547.9	27.6

$4841 \times 10 = 48410$

Ht. Mean Dist Area

5133.3	549.1	549.1	0.0	
				$2.55 \times 6.7 = 17.1$
40	54.3	49.2	5.1	
50	62.0	49.5	12.5	$25.4 \times 10 = 254.0$
60	69.7	49.0	20.7	*
				$23.65 \times 7.65 = 180.9$
67.65	575.5	548.9	26.6	
				$26.7 \times 12.35 = 329.7$

✓ ✓ ✓







East		N3620		
below D.S. Toe Wall		D.S.	Ht.	Mean Dist. Area in sq. ft.
4400.5	537.6	537.6	0.0	
				$3.8 \times 2.5 = 9.5$
03	38.4	31.8	7.6	
				$9.05 \times 12 = 108.6$
15	42.3	31.8	10.5	
				$12.1 \times 10 = 121.0$
25	45.7	32.0	13.7	
				$13.35 \times 13 = 173.6$
38	50.1	37.1	13.0	
				$13.5 \times 2 = 27.0$
40	50.8	36.8	14.0	
50	54.1	36.8	17.3	
60	57.4	37.4	20.0	
70	60.8	38.0	22.8	$139.15 \times 10 = 1391.5$
80	64.1	37.8	26.3	
90	67.4	38.1	29.3	
4500	70.7	37.8	32.9	
				$32.95 \times 0.3 = 9.9$
00.3	570.8	537.8	33.0	

East		N3620		
		D.S.	Ht.	Mean Dist. Area in sq. ft.
4500.3	570.8	540.0	30.8	
				$30.95 \times 1 = 31.0$
01.3	71.1	540.0	31.1	
				$15.55 \times 11.5 = 178.8$
4512.8	575.0	575.0	0.0	
				2050.9 <sup>4</sup>
Toe Wall				
4516.8	575.5	536.6	38.9	
				$38.9 \times 14.2 = 552.4$
31	575.5	36.6	38.9	
				$37.9 \times 3 = 113.7$
34	575.5	38.6	36.9	
				$36.75 \times 6 = 220.5$
40	575.5	38.9	36.6	
50	"	38.8	36.7	
60	"	38.7	36.8	
70	"	38.8	36.7	$220.05 \times 10 = 2200.5$
80	"	38.9	36.6	
90	"	38.9	36.6	
4600	575.5	538.8	36.7	



East	N3620 D.S.	Ht.	Mean Dist.	Area in sq. ft.
4610	575.5	538.8	36.7	
20	"	38.9	36.6	
30	"	39.0	36.5	
40	"	39.0	36.5	
50	"	39.0	36.5	$3440.5 \times 10 = 3440.5$
60	"	39.0	36.5	
70	"	45.3	30.2	
80	"	45.1	30.4	
90	"	44.9	30.6	
4700	"	45.1	30.4	
				$30.4 \times 14 = 42.6$
01.42	575.5	45.1	30.4	
				$26.2 \times 86 = 225.3$
10	66.9	44.9	22.0	
20	56.9	45.3	11.6	$2335 \times 10 = 233.5$
30	46.9	45.4	1.5	
				$0.75 \times 0.9 = 0.7$
4730.9	546.0	546.0	0.0	

39

East	N3620 D.S.	Ht.	Mean Dist.	Area in sq. ft.
				From 575.5 to 600.9 = $\frac{134.3}{2} \times 25.4 = 3411.2$
				$\frac{3411.2}{0.4} = 3411.6$ sq ft
				From 600.9 to 651.7 = $\frac{67.5}{2} \times 50.8 = 3429.0$ " "
				651.7 to 702.3 = $\frac{45}{2} \times 50.5 = 2272.5$ " "
				16142.8
East	N3620 D.S.	Ht.	Mean Dist.	Area in sq. ft.
				From 651.5 to 702.3 = $\frac{89.9+43.5}{2} \times 50.8 = 3388.4$ "
				626.2 to 651.5 = $\frac{123+99.9}{2} \times 25.3 = 2819.7$ "
				600.8 to 626.2 = $\frac{205.1+109.5}{2} \times 25.4 = 3995.4$ "
				$\frac{3995.4}{0.9} = 3996.3$ "
				575.5 to 600.8 = $\frac{323+215.1}{2} \times 25.3 = 6807$ "
				$2.2 \times 7.9 = 17.4$
5132.1	548.2	48.2	0.0	
40	54.3	49.9	44	
50	562.0	544.5	12.5	$249 \times 10 = 249.0$



East		N3620 U.S.		Ht.	Mean Dist. Ht.	Area in Sq. ft.
4	5160	569.7	549.3	20.4 <sup>x</sup>		
						$23.45 \times 7.65 = 179.4$
	67.6 <sup>6</sup>	575.5	49.0	26.5		
						$26.5 \times 12.35 = 327.9$
	80	575.5	48.9	26.6		
	90	"	48.7	26.8		
	5200	"	48.5	27.0		
	10	"	49.0	26.5		
	20	"	49.2	26.3		
	30	"	49.1	26.4		
	40	"	49.0	26.5		
	50	"	49.5	26.0		
	60	"	49.5	26.0		
	70	"	48.9	26.6		
	80	"	48.4	27.1		
	90	"	47.1	28.4		
	5300	"	47.9	27.6		
	10	"	48.1	27.4		
	20	575.5	548.0	27.5		

East		N3620 U.S.		Ht.	Mean Dist. Ht.	Area in Sq. ft.
	5330	575.5	548.2	27.3		
	40	"	48.2	27.3		$868.3 \times 10 = 8683.0$
	50	"	48.1	27.4		
	60	"	48.2	27.3		
	70	"	49.8	25.7		
	80	"	48.0	27.5		
	90	"	48.4	27.1		
	5400	"	48.3	27.2		
	10	"	48.3	27.2		
	20	"	48.2	27.3		
	30	"	48.8	26.7		
	40	"	48.8	26.7		
	50	"	49.2	26.3		
	60	"	43.6	31.9		
	70	"	37.4	38.1		
	80	"	36.5	39.0		
	90	575.5	37.7	37.8 <sup>x</sup>		
						$38 \times 2.26 = 85.9$
	Toe Wall					
	92.26	575.5	537.3	38.2		$26554.0^{\square}$



East		N3620			
be above U.S. Toe Wall	U.S.	Ht.	Mean Dist Ht.	Area in sq. ft.	
5496.3	575.0	575.0	00		
				$15.5 \times 11.7 = 181.4$	
5508	71.0	40.0	31.0		
				$32.85 \times 1 = 32.85$	
09	70.7	40.0	30.7		
09	70.7	38.4	32.3		
				$30.75 \times 11 = 338.25$	
20	67.1	37.9	29.2		
				$28.15 \times 6 = 168.9$	
5526	65.1	38.0	27.1		
				$13.55 \times 26.8 = 363.14$	
5552.8	556.3	556.3	0.0		
				$1082.4$	

East		N3630				41
below D.S. Toe Wall	D.S.	Ht.	Mean Dist Ht.	Area in sq. ft.		
44034	538.6	538.6	0.0			
				$3.15 \times 16 = 50.4$		
05	39.1	32.8	6.3			
20	44.0	32.0	12.0			
				$33.3 \times 5 = 166.5$		
25	45.7	32.7	13.0			
30	47.4	37.1	10.3			
40	50.8	36.7	14.1			
50	54.1	36.9	17.2			
60	57.4	37.1	20.3			
				$15.13 \times 10 = 151.3$		
70	60.8	38.0	22.8			
80	64.1	38.3	25.8			
90	67.4	37.9	29.5			
4500	70.7	37.8	32.9			
4500	70.7	40.0	30.7			
				$30.9 \times 13 = 40.17$		
01.3	71.1	40.0	31.1			
12.9	575.0	575.0	0.0			
				$15.55 \times 11.6 = 180.38$		
				$1905.1$		



East		N3630			
		D.S.	Ht.	Mean Dist.	Area in Sq. Ft.
Top Wall	4516.9	575.6	537.2	38.4	
				$38.3 \times 3.1 = 118.7$	
20	575.6	37.4	38.2		
30	"	38.6	37.0		
40	"	41.0	34.6		
50	"	41.0	34.6		
60	"	40.9	34.7		
70	"	40.9	34.7		
80	"	40.1	35.5		
90	"	39.9	35.7		
4600	"	39.6	36.0		
10	"	39.8	35.8		
20	"	39.6	36.0		$62335 \times 10 = 6233,5$
30	"	39.9	35.7		
40	"	39.7	35.9		
50	"	39.6	36.0		
60	"	40.7	34.9		
70	"	45.0	30.6		
80	575.6	545.0	30.6		

		N3630				42
		D.S.	Ht.	Mean Dist.	Area in Sq. Ft.	
4690	575.6	545.0	30.6			
4700	"	44.9	30.7			
			$30.7 \times 1.3 = 39.9$			
013	575.6	44.9	30.7			
			$2635 \times 8.7 = 229.7$			
10	566.9	44.9	22.0			
20	56.9	44.8	12.1		$23.9 \times 10 = 239.0$	
30	46.9	45.3	1.6			
			$0.8 \times 1 = 0.8$			
5731	545.9	545.9	0.0			
From	575.6 to 600.9 =	$\frac{184.4 + 84.1}{2} \times 25.3 = 3396.5$				
	600.9 to 651.7 =	$\frac{75 + 60}{2} \times 50.8 = 3479$				
	651.7 to 702.2 =	$\frac{50 + 40}{2} \times 50.5 = 2272.5$				
						$15959.5 - 4'$



East		N/3630 U.S.			
4	From	651.5 to 702.3 =	$\frac{89.9 + 43.5}{2} \times 50.8 = 3388.4$		
"	"	626.7 to 651.5 =	$\frac{122 + 99.9}{2} \times 25.3 = 2819.7$		
"	"	600.8 to 626.7 =	$\frac{205.1 + 109.5}{2} \times 25.4 = 3995.4$		
"	"	575.5 to 600.8 =	$\frac{322.7 + 215.1}{2} \times 25.3 = 6807$		
				Ht.	Mean Dist.
				Ht.	Area in Sq. ft.
5130		546.7	46.7	0.0	
40		543	49.9	4.4	
50		62.0	49.7	123	$26.75 \times 10 = 267.5$
60		69.7	49.6	20.1	
					$23.1 \times 7.65 = 176.7$
67.65		575.5	49.4	26.1	
					$26.1 \times 2.35 = 61.3$
70		575.5	49.4	26.1	
5280		"	49.4	26.1	
90		"	49.0	26.5	
5200		"	49.0	26.5	
10		"	49.0	26.5	
20		"	49.4	26.1	
30		"	49.8	25.7	
40		575.5	549.7	25.8	

East		N3630 U.S.		Ht.	Mean Dist.	Area in Sq. ft.
5250		575.5	549.9	25.6		
60	"		49.2	26.3		
70	"		48.8	26.7		
80	"		47.7	27.8		
90	"		47.4	28.1		
5300	"		47.6	27.9		$699.05 \times 10 = 6990.5$
10	"		47.6	27.9		
20	"		47.4	28.1		
30	"		47.7	27.8		
40	"		48.0	27.5		
50	"		48.2	27.3		
60	"		48.1	27.4		
70	"		48.3	27.2		
80	"		49.1	26.4		
90	"		48.6	26.9		
5400	"		49.0	26.5		
10	"		48.6	26.9		
20	"		48.5	27.0		
30		575.5	549.5	27.0		



East		N3630 U.S.		Ht.	Mean Dist.	Area in Sq. Ft.
5440	575.5	548.5	27.0			
50	"	49.6	25.9			
60	"	43.8	31.7	1939.5 x 10	1939.5	
70	"	37.6	37.9			
80	"	36.5	39.0			
90	"	37.6	37.9			
Toe Wall						
5491.6	575.5	537.7	37.8	$37.85 \times 1.6 = 60.6$		$26,507.5^{\circ}$
above U.S. Toe Wall						
5495.6	575.0	575.0	0.0			
				$15.55 \times 11.7 = 181.9$		
5507.3	71.1	40.0	31.1			
				$30.75 \times = 30.8$		
↓ 08.3	↘ 70.4	40.0	30.4			
↑ 08.3	↗ 70.4	38.7	31.7			
				$30.2 \times 11.7 = 353.3$		
20	66.9	38.2	28.7			
				$27.7 \times 5 = 138.5$		
25	65.2	38.5	26.7			
				$13.35 \times 25 = 338.8$		
5550	556.8	556.8	0.0			

East		N3640 U.S.		Ht.	Mean Dist.	Area in Sq.
3/21/30 44						
1043.3 <sup>sq</sup>						
below U.S. Toe Wall						
4403.5	538.5	538.5	0.0			
						$2.5 \times 1.5 = 3.8$
05	39.0	34.0	5.0			
10	40.7	32.1	8.6			$16.55 \times 5 = 82.8$
15	42.4	31.5	10.9			
						$12.2 \times 9 = 109.8$
24	545.3	531.8	13.5			
						$12.45 \times 2 = 24.9$



East		N3640		Ht.	Mean Ht.	Dist.	Area in Sq. ft.
	below D.S. Toe Wall	D.S.					
2426	546°	534.6	11.4				
						$10.95 \times 4 = 43.8$	
30	47.4	36.9	10.5				
40	50.8	36.7	14.1				
50	54.1	37.0	17.1				
60	57.5	37.4	20.1				
70	60.8	37.7	23.1			$15.05 \times 10 = 150.5$	
80	64.1	38.3	25.8				
90	67.4	38.3	29.1				
4500	70.7	37.7	33.0				
4500	70.7	40.0	30.7				
						$30.85 \times 1 = 30.8$	
4501	71.0	40.0	31.0				
						$15.5 \times 11.8 = 182.9$	
4512.8	575.0	575.0	0.0			$1989.3$	
<hr/>							
Toe Wall							
4516.8	575.5	537.4	38.1				
						$38 \times 3.2 = 121.6$	
20	575.5	537.6	37.9				

East		N3640		Ht.	Mean Ht.	Dist.	Area in Sq. ft.
		D.S.					
4530	575.5	539.0	36.5				
40	"	43.9	31.6				
50	"	43.3	32.2				
60	"	43.0	32.5				
70	"	42.6	32.9				
80	"	42.6	32.9				
90	"	42.7	32.8				
4600	"	42.9	32.6				
10	"	43.4	32.1			$575.45 \times 10 = 5754.5$	
20	"	43.9	31.6				
30	"	44.2	31.3				
40	"	45.1	30.4				
50	"	45.2	30.3				
60	"	45.0	30.5				
70	"	45.0	30.5				
80	"	45.2	30.3				
90	"	45.2	30.3				
4700	575.5	545.1	30.4				
						$30.4 \times 1.4 = 42.6$	



East

N3640

D.S.

Top

Bottom

Ht.

Mean Ht.

Dist

Area in sq.ft

4701.4

575.5

545.1

30.4

$26.5 \times 8.6 = 228.4$

10

66.9

45.0

21.9

20

56.9

44.7

12.2

$24.1 \times 10 = 241.0$

30

46.9

45.0

1.9

$0.95 \times 1.1 = 1.0$

4731.1

545.8

545.8

0.0

From

575.5 to

600.8 =

$\frac{184.5 + 84.2}{2} \times 25.3 = 3399.1$

"

600.8 to

651.5 =

$\frac{75 + 60}{2} \times 50.7 = 3422.3$

"

651.5 to

702.2 =

$\frac{50 + 40}{2} \times 50.7 = 2281.5$

$15482.8$

510

40

50

60

516.7

30

East

N3640

U.S.

46

From

651.5 to

702.3 =

$\frac{89.9 + 43.5}{2} \times 50.8 = 3388.4$

626.1 to

651.5 =

$\frac{123.3 + 99.9}{2} \times 25.4 = 2834.6$

600.8 to

626.1 =

$\frac{205.1 + 109.9}{2} \times 25.3 = 3984.8$

575.5 to

600.8 =

$\frac{323.1 + 215.1}{2} \times 25.3 = 6808.2$

5130

546.6

546.6

Ht. Mean Dist area in  
sq.ft.

40

54.3

50.2

4.1

$26.4 \times 10 = 264.0$

50

62.0

49.7

12.3

60

69.7

49.7

20.0

$23 \times 7.7 = 177.1$

5167.7

575.5

549.5

26.0

$25.95 \times 12.3 = 319.2$

80

575.5

549.6

25.9

90

"

49.3

26.2

5200

"

48.9

26.6

10

"

48.8

26.7

$183.3 \times 10 = 1833.0$

20

"

49.2

26.3

30

"

49.8

25.7

40

"

49.7

25.8

50

575.5

549.4

26.1



East		N3640 U.S.		Ht	Mean Dist.	Area in Sq. ft.
				Ht.		
5260	575.5	549.0	26.5			
70	"	47.9	27.0			
80	"	46.4	29.1			
90	"	46.9	28.7			
5300	"	46.8	28.7			
10	"	47.2	28.3			
20	"	46.9	28.6			
30	"	46.2	29.3			
40	"	47.8	27.7			
50	"	48.4	27.1			
60	"	48.0	27.5			
70	"	49.3	26.2			
80	"	48.9	26.6			
90	"	48.5	27.0			
5400	"	48.5	27.0			
10	"	48.5	27.0			
20	"	48.8	26.7			
30	"	48.2	27.3			
40	575.5	548.4	27.1			
	"	"	"			

$64965 \times 10 = 649650$

East		N3640 U.S.		Ht.	Mean Dist.	Area in Sq. ft.
				Ht.		
5450	575.5	549.2	26.3			
60	"	45.4	30.1			
70	"	38.4	37.1			
80	"	37.3	38.2			
						$37.85 \times 11.06 = 418.6$
5491.06	575.5	538.0	37.5			$26525.2$
Above U.S. Top Wall						
5495.07	575.0	575.0	0.0			
						$15.7 \times 11.7 = 183.7$
5506.76	571.4	540.0	31.4			
						$31.25 \times 1 = 31.2$
5507.76	571.1	540.0	31.1			
5507.76	571.1	538.3	33.8			
						$32.85 \times 2.24 = 73.6$
10	570.4	532.5	31.9			
						$30. \times 10 = 300.0$
20	66.7	38.6	28.1			
						$27.45 \times 4 = 109.8$
24	65.4	38.6	26.8			
						$23.8 \times 6 = 142.8$
30	563.4	542.6	20.8			



East

N3640

U.S. Ht. Mean Dist. Area in  
Ht. Sq. ft.

5540 559.9 549.2 10.7 2145 x 10 = 2145

50 56.6 55.9 0.7

0.35 x 0.7 = 0.2

50.7 556.4 556.4 0.0

1055.8<sup>0</sup>

East

N3650

Below D.S. Toewall  
vertical D.S. Ht. Mean Dist. Area in  
Ht. Sq. ft.

4403 538.7 532.2 6.5

8.7 x 12 = 104.4

15 42.6 31.7 10.9

12.45 x 9 = 112.1

24 545.7 531.7 14.0

12.8 x 3 = 38.4

East

N3650

D.S. Ht. Mean Dist. Area in  
Ht. Sq. ft.

48

4427 546.7 535.1 11.6

12.9 x 13 = 167.7

40 51.0 36.8 14.7

50 54.3 37.1 17.2

60 57.6 37.6 20.0

107.95 x 10 = 1079.5

70 60.9 37.7 23.3

80 64.3 38.4 25.9

90 567.6 538.5 29.1

30.9 x 9.8 = 302.8

4499.8 570.8 538.1 32.7

4499.8 570.8 540.0 30.8

30.95 x 0.9 = 27.8

4500.7 571.1 540.0 31.1

15.55 x 11.7 = 181.9

4512.36 575.0 575.0 0.0

2014.6<sup>0</sup>

4516.37 575.6 537.9 37.7

37.5 x 3.63 = 136.1

20 575.6 538.3 37.3



East

N3650

D.S. Ht. Mean Dist. area in  
Ht. Sq. ft.

East	D.S.	Ht.	Mean Dist.	area in Sq. ft.
4530	575.6	541.1	345	
40	75.6	43.2	324	
50	75.6	42.8	328	
60	75.6	43.0	326	
70	575.6	42.4	332	
80	"	41.6	330	
90	"	42.3	333	
4600	"	43.1	325	
10	"	43.1	325	$577.8 \times 10 = 5778.0$
20	"	43.7	31.9	
30	"	44.1	31.5	
40	"	44.3	31.3	
50	"	44.5	31.1	
60	"	44.8	30.8	
70	"	45.2	30.4	
80	"	45.4	30.2	
90	"	45.7	29.9	
4700	575.6	545.1	30.5	$30.5 \times 132 = 40.3$

East

N3650

D.S. Ht. Mean Dist. area in  
Ht. Sq. ft.

April 30, 34

J.W.W. 49

East	D.S.	Ht.	Mean Dist.	area in Sq. ft.
4701.3	575.6	545.1	30.5	
				$264 \times 8.7 = 229.7$
10	566.9	44.6	223	
20	56.9	44.4	12.5	$24.7 \times 10 = 247.0$
30	46.9	44.8	2.1	
				$1.05 \times 1.2 = 1.3$
4731.2	545.7	545.7	0.0	
				$575.6 \text{ to } 600.9 = \frac{134.3}{2} \times 25.3 = 3396.5$
				$600.9 \text{ to } 651.5 = \frac{75+60}{2} \times 50.6 = \frac{3397.3}{0.84} = 3415.5$
				$651.5 \text{ to } 702.2 = \frac{50+40}{2} \times 50.7 = 2281.5$
				$15526.7$



East

N/3650

U.S.

From 651.5 to 702.3 =  $\frac{89.9+43.5}{2} \times 50.8 = 3388.4$ <sup>0</sup>  
 " 626.1 to 651.5 =  $\frac{123.3+99.9}{2} \times 25.4 = 2834.6$ <sup>0</sup>  
 " 600.8 to 626.1 =  $\frac{205.1+109.9}{2} \times 25.3 = \frac{3984.8}{0.2+}$ <sup>0</sup>  
 " 575.5 to 600.8 =  $\frac{269.0+215.1}{2} \times 25.3 = 6807.0$ <sup>0</sup>

			Ht.	Mean Dist.	Area in Sq. ft.
5130	546.6	546.6	0.0		
40	54.3	50.2	4.1		
50	62.0	49.8	12.2		26.35 x 10. = 263.5
60	69.7	49.6	20.1		
					23.1 x 7.7 = 177.9
67.7	575.5	49.4	26.1		
					26.5 x 2.3 = 60.1
70	575.5	49.3	26.2		
80	"	49.4	26.1		
90	"	49.1	26.4		
5200	"	48.8	26.7		
10	"	48.5	27.0		
20	"	49.0	26.5		
30	575.5	549.3	26.2		

East

N/3650

U.S.

Ht.

Mean Ht.

Dist. Area in Sq. ft.

50

5240	575.5	549.5	26.0		
50	"	48.8	26.7		
60	"	49.0	26.5		
70	"	48.4	27.1		
80	"	47.5	28.0		
90	"	46.7	28.8		
5300	"	46.8	28.7		679.3 x 10 = 6793.0
10	"	47.3	28.2		
20	"	47.0	28.5		
30	"	47.0	28.5		
40	"	47.3	28.2		
50	"	47.6	27.9		
60	"	48.3	27.2		
70	"	48.7	26.8		
80	"	48.5	27.0		
90	"	49.0	26.5		
5400	"	49.2	26.3		
10	"	48.6	26.9		
20	575.5	548.5	27.0		



East

N3650  
U.S.Ht. Mean Dist. area in  
Ht. 39 ft.

5430 575.5 548.4 27.1

40 " 49.7 25.8

50 " 49.8 25.7

60 " 45.2 30.3

70 " 37.4 38.1

80 " 37.5 38.0

90 " 37.6 37.9<sub>x</sub>

$37.9 \times 0.77 = 29.2$

5490.77 575.5 537.6 37.9

$24513.8^4$

above U.S. Toe Wall

5494.77 575.0 575.0 0.0

$15.55 \times 11.7 = 181.9$

5506.47 571.1 540.0 31.1

$30 \times 0.8 = 24.0$

5507.27 v 70.9 540.0 30.9

5507.27 ^ 70.9 390 31.9

$30. \times 12.73 = 381.9$

20 566.7 538.6 28.1

$27.5 \times 4 = 110.0$

East.

N3650  
U.S.Ht. Mean Dist. area in  
Ht. 39 ft.

51

5524 565.4 538.5 26.9

$23.9 \times 6 = 143.4$

30 63.4 42.5 20.9

40 60.1 49.2 10.9  $21.7 \times 10 = 217.0$ 50 56.8 56.1 0.7<sub>x</sub>

$0.7 \times 0.7 = 0.5$

5550.7 556.6 556.6 0.0

$1058.7^4$



East	N3660			
	D.S.	Ht.	Mean Dist.	area in Sq. ft.
Below D.S. Toe Wall				
4400.6	538.2	38.2	0.0	
				$34 \times 24 = 816$
03	39.0	32.2	6.8	
				$8 \times 7 = 56.0$
10	41.3	32.1	9.2	
				$10.25 \times 5 = 50.2$
15	43.0	32.1	10.9	
				$124 \times 9 = 1116$
24	45.9	32.0	13.9	
				$12.3 \times 1 = 12.3$
25	46.1	35.4	10.7	
				$12.7 \times 15 = 190.5$
40	51.2	36.5	14.7	
50	54.5	37.6	16.9	
60	57.8	37.8	20.0	
				$107.65 \times 10 = 1076.5$
70	61.1	38.1	23.0	
80	64.4	38.5	25.9	
90	67.8	38.8	29.0	
				$30.8 \times 91 = 2803$
4499.1	570.8	538.2	32.6	

East	N3660				52
	D.S.	Ht.	Mean Dist.	area in Sq. ft.	
4499.1	570.8	540.0	30.8		
					$30.95 \times 0.9 = 27.8$
4500	571.1	540.0	31.1		
					$15.55 \times 11.7 = 181.9$
11.70	575.0	575.0	0.0		$1995.3$
D.S. Toe Wall Face					
4515.7	575.6	537.7	37.9		
					$38.15 \times 43 = 1640$
20	575.6	537.4	38.2		
30	"	39.5	36.1		
40	"	43.9	31.7		
50	"	43.0	32.6		
60	"	43.0	32.6		
70	"	42.5	33.1		$339.2 \times 10 = 3392.0$
80	"	42.0	33.6		
90	"	42.1	33.5		
4600	"	43.2	32.4		
10	"	43.1	32.5		
70	575.6	543.6	32.0		



East	N3660 D.S.	Ht.	Mean Dist. Ht.	Area in sq. ft.
4630	575.6	544.0	31.6	
40	"	44.3	31.3	
50	"	45.0	30.6	
60	"	44.6	31.0	$246.2 \times 10 = 2462.0$
70	"	45.0	30.6	
80	"	45.5	30.1	
90	"	45.8	29.8	
4700	575.6	45.2	30.4	

$30.4 \times 1.3 = 39.5$

01.3	575.6	45.2	30.4	
				$26.2 \times 8.7 = 227.9$
10	566.9	44.9	22.0	
20	56.9	44.6	12.3	$244.5 \times 10 = 2445$
30	546.9	544.6	2.3	

$1.15 \times 1.1 = 1.3$

47 31.1	545.8	545.8	0.0	
From	575.6 to 600.9			$\frac{184.4 + 24.1}{2} \times 25.3 = \frac{3396.5}{2} = 1698.25$
	600.9 to 651.6			$\frac{75 + 60}{2} \times 50.7 = 3422.3$
	651.6 to 702.2			$\frac{50 + 40}{2} \times 50.6 = 2277.0$

✓ ✓ ✓ ✓ ✓ ✓

15567.4

East	N3660 D.S.	Ht.	Mean Dist. Ht.	Area in sq. ft.
5132.7	548.7	548.7	0.0	
40	54.3	50.0	4.3	
50	62.0	49.7	12.3	$246.5 \times 10 = 2465$
60	569.7	549.3	20.4	

N3660

U.S. <sup>66.45</sup>

651.5 to 702.3				$\frac{89.8 + 43.5}{2} \times 50.8 = 3385.8$
626.2 to 651.5				$\frac{123 + 99.8}{2} \times 25.3 = 2818.4$
600.8 to 626.2				$\frac{205.1 + 109.5}{2} \times 25.4 = \frac{3945.4}{2} = 1972.7$
575.5 to 600.8				$\frac{323.7 + 215.1}{2} \times 25.3 = 6807.0$

Ht. Mean Dist. Area in  
Ht. sq. ft.

$2.15 \times 7.3 = 15.7$

40	54.3	50.0	4.3	
50	62.0	49.7	12.3	$246.5 \times 10 = 2465$
60	569.7	549.3	20.4	
				$2335 \times 7.65 = 178.6$

✓ ✓ ✓ ✓



East	N3660 U.S.		Ht.	Mean Dist.	Area in sq. ft.
5167.68	575.5	549.2	26.3		
				$26.3 \times 235 = 61.8$	
70	575.5	49.2	26.3		
80	"	49.2	26.3		
90	"	49.5	26.0		
5200	"	49.0	26.5		
10	"	48.5	27.0		
20	"	48.6	26.9		
30	"	49.2	26.3		
40	"	49.7	26.8		
50	"	48.5	27.0		
60	"	48.5	27.0		
70	"	47.7	27.8		
80	"	47.7	27.8		
90	"	47.0	28.5		
5300	"	46.5	29.0		
10	"	46.1	29.4		
20	"	46.7	28.8		
30	575.5	546.7	28.8		

East	N3660 U.S.		Ht.	Mean Dist.	Area in sq. ft.
5340	575.5	546.9	28.6		
50	"	47.5	28.0		$8558.5 \times 10 = 85585$
60	"	48.1	27.4		
70	"	48.0	27.5		
80	"	47.9	27.6		
90	"	49.7	25.8		
5400	"	48.9	26.6		
10	"	49.4	26.1		
20	"	49.0	26.5		
30	"	48.7	26.8		
40	"	49.6	25.9		
50	"	50.3	25.2		
60	"	48.3	27.2		
70	"	40.7	34.8		
80	"	37.9	37.6		
					$37.65 \times 10.67 = 401.7$
5440.67	575.5	537.8	37.7		
					$26,470.3$



East		N3660 4-5.		Ht.	Mean Dist.	Area in
				Ht.	Ht.	Sq. Ft.
Above U.S. Toe Wall						
5494.67	575.0	575.0	0.0			
					$15.55 \times 11.73 = 182.4$	
5506.4	71.1	40.0	31.1			
					$30.95 \times 0.8 = 24.8$	
07.2	70.8	40.0	30.8			
07.2	70.8	39.8	31.0			
					$29.25 \times 12.8 = 374.4$	
20	66.6	39.1	27.5			
					$26.9 \times 4 = 107.6$	
24	65.3	39.0	26.3			
					$23.3 \times 6 = 139.8$	
30	63.3	43.0	20.3			
					$15.3 \times 10 = 153.0$	
40	60.0	49.7	10.3			
					$5.15 \times 10.4 = 53.6$	
50.4	556.6	556.6	0.0			
	✓	✓	✓			$1035.6$

East		N3670		Ht.	Mean Dist.	Area in
		D.S.		Ht.	Ht.	Sq. Ft.
Below U.S. Toe Wall						
4299.5	538.3	538.3	0.0			
						$3.45 \times 2.5 = 8.6$
4402	39.1	32.7	6.9			
						$8.15 \times 8 = 65.2$
10	41.7	32.3	9.4			
						$10.4 \times 7 = 72.8$
17	44.0	32.6	11.4			
						$11.15 \times 8 = 89.2$
25	46.6	35.7	10.9			
						$11.15 \times 5 = 55.8$
30	48.3	36.9	11.4			
40	51.6	37.6	14.0			
50	54.8	38.0	16.8			
60	58.1	38.0	20.1			$120.15 \times 10 = 1201.5$
70	61.4	38.5	22.9			
80	564.8	538.7	26.1			
	✓	✓	✓			



East	N3670 D.S.		Ht.	Mean Ht.	Dist.	Area in sq.ft
4490	568.0	538.9	29'			
						$30.6 \times 8.3 = 254.0$
98.3	∨ 70.8	38.7	32'			
98.3	∧ 70.8	40.0	30.8			
						$30.95 \times 0.7 = 21.7$
4499.0	71.1	40.0	31.1			
						$15.55 \times 11.8 = 183.5$ $1952.3$
4510.8	575.0	75.0	0.0			
<hr/>						
4514.8	575.5	538.3	37.2			
						$37.3 \times 5.2 = 194.0$
20	575.5	38.1	37.4			
30	"	39.2	36.3			
40	"	43.0	32.5			
50	"	42.6	32.9			
60	"	42.4	33.1			
70	"	42.6	32.9			
80	"	42.0	33.5			
90	575.5	542.8	32.7			
	∨	∨	∨	∨	∨	∨

East	N3670 D.S.		Ht.	Mean Ht.	Dist.	Area in sq.ft.	56
4600	575.5	542.8	32.7				
							$580. \times 10 = 5800.0$
10	"	43.1	32.4				
20	"	43.5	32.0				
30	"	43.7	31.8				
40	"	43.9	31.6				
50	"	44.4	31.1				
60	"	45.2	30.3				
70	"	45.4	30.1				
80	"	45.5	30.0				
90	"	45.3	30.2				
4700	575.5	45.1	30.4*				
							$30.4 \times 1.4 = 42.6$
4701.4	575.5	545.1	30.4				
							$26.25 \times 8.6 = 225.8$
10	66.9	44.8	22.1				
20	56.9	44.7	12.2				$24.3 \times 10 = 243.0$
30	46.9	44.8	2.1*				
							$1.05 \times 1.4 = 1.5$
31.4	545.5	545.5	0.0				
	∨	∨	∨	∨	∨	∨	∨



East N3670 D.S.

From 575.5 to 600.8 =  $\frac{184.5 + 84.2}{2} \times 25.3 = \frac{268.7}{2} \times 25.3 = 3399.1$   
 $\frac{0.3}{3399.4}$

" 600.8 to 651.5 =  $75 + 60 \times 50.7 = 3422.3$

" 651.5 to 702.2 =  $\frac{50 + 40}{2} \times 50.7 = \frac{90}{2} \times 50.7 = 2281.5$   
 $\frac{15,602.1}{15,602.1}$

East N3670 U.S.

From 651.5 to 702.3 =  $\frac{89.9 + 43.5}{2} \times 50.8 = \frac{133.4}{2} \times 50.8 = 3388.4$  sq. ft.

" 626.1 to 651.5 =  $\frac{123.3 + 99.9}{2} \times 25.4 = \frac{223.2}{2} \times 25.4 = 2834.6$  sq. ft.

" 600.8 to 626.1 =  $\frac{205.1 + 109.9}{2} \times 25.3 = \frac{315.0}{2} \times 25.3 = 3984.8$   
 $\frac{0.8}{3985.6}$  sq. ft.

" 575.5 to 600.8 =  $\frac{323 + 215.1}{2} \times 25.3 = \frac{538.1}{2} \times 25.3 = 6809.0$  sq. ft.

East N3670 J. W. V. July 1934 U.S. 57

Ht.	Mean Dist.	Area in Sq. ft.
5134.2	549.9	549.9 0.0
		$2.2 \times 5.7 = 12.5$
40	54.3	49.9 4.4
50	62.0	49.7 $12.37475 \times 10 = 247.5$
60	69.7	49.2 20.5 <sub>x</sub>
		$23.5 \times 7.7 = 181.0$
5167.7	575.5	49.0 26.5
		$26.5 \times 2.3 = 61.0$
70	575.5	49.0 26.5
80	"	48.9 26.6
90	"	48.5 27.0
5700	"	48.8 26.7
10	"	48.6 26.9
70	"	48.5 27.0 $266.75 \times 10 = 2667.5$
80	"	49.2 26.3
40	"	49.8 25.7
50	"	48.9 26.6
60	"	48.5 27.0
70	575.5	548.1 27.4 <sub>x</sub>



East	N3670		U. Stream	Ht.	Mean Ht.	Dist.	Area in Sq. Ft.
5280	575.5	547.8	27.7				
90	"	47.3	28.2				
5300	"	46.8	28.7				
10	"	46.3	29.2				
20	"	46.4	29.1				
30	"	46.4	29.1				
40	"	46.8	28.7				
50	"	47.2	28.3		$626.65 \times 10 = 6266.5$		
60	"	47.8	27.7				
70	"	48.2	27.3				
80	"	46.5	29.0				
90	"	47.4	27.6				
5400	"	49.6	25.9				
10	"	48.8	26.7				
20	"	48.8	26.7				
30	"	48.8	26.7				
40	"	49.4	26.1				
50	"	49.8	25.7				
60	575.5	548.0	27.5				

East	N3670		UP stream	Ht.	Mean Ht.	Dist.	Area in Sq. Ft.
5470	575.5	544.2	31.3				
80	"	38.3	37.2				
90	"	38.4	37.1				
5490.77	575.5	538.4	37.1			$37.1 \times 0.77 = 28.6$	$26480.2$
Above U.S. Toe wall							
5494.77	575.0	575.0	0.0				
						$14.25 \times 10.73 = 152.9$	
5505.5	71.5	43.0	28.5				$28.2 \times 1.8 = 50.8$
073	70.9	43.0	27.9				
073	70.9	40.4	30.5				$28.7 \times 12.7 = 364.5$
20	66.7	39.8	26.9				
25	65.0	39.3	25.7			$49.5 \times 5 = 247.5$	
30	63.4	42.7	20.7			$15.75 \times 10 = 157.5$	
40	60.1	49.3	10.8				$5.8 \times 10.7 = 57.8$
50.7	556.6	556.6	0.0				$1031.0$

J.W.V.

58



	East	N3680 D.S.	Ht.	Mean Dist Ht.	area in 50 ft
	4440	552.0	537.9	14.1	
	50	55.3	38.2	17.1	
	60	58.6	37.2	21.4	10925 x 10 = 1092.5
	70	61.9	38.9	23.0	
	80	65.2	39.1	26.1	
	90	68.5	39.3	29.2	
					3045 x 7.07 = 215.3

East	N3680 D.S.		Ht.	Mean Dist Ht.	area in 50 ft
Below D.S. Top Wall	4398.8	538.6	538.6	00	
					3.1 x 1.2 = 3.7
4400	39.0	32.8	6.2		7.7 x 10 = 77.0
10	42.2	33.0	9.2		10.45 x 7 = 73.2
17	44.5	32.8	11.7		11.4 x 3 = 34.2
20	45.5	34.4	11.1		11.9 x 10 = 119.0
30	48.8	36.1	12.7		
35	55.4	536.8	13.6	27. x 5 = 135.0	

	East	N3680 D.S.	Ht.	Mean Dist Ht.	area in 50 ft
	4497.07	70.8	39.1	31.7	
	4497.07	70.8	40.0	30.8	
					3095 x 0.7 = 21.7
	4497.77	71.1	40.0	31.1	
					15.55 x 11.86 = 184.4
					1956.0
	4509.63	575.0	575.0	0.0	
	4513.67	575.5	538.4	37.1	
					36.95 x 6.33 = 233.9
	20	575.5	38.7	36.8	
					36.3 x 10 = 363.0
	30	575.5	539.7	35.8	







East N3680  
U.S.

From 651.5 to 702.2 =  $\frac{90 + 43.5}{2} \times 50.7 = 3384.7$   $\square$

" 626.1 to 651.5 =  $\frac{123.3 + 100}{2} \times 25.4 = 2835.9$   $\square$

" 600.8 to 626.1 =  $\frac{205.1 + 109.9}{2} \times 25.3 = \frac{3984.8}{3985.6}$   $\square$

" 575.4 to 600.8 =  $\frac{323.1 + 215.1}{2} \times 25.4 = 6835.1$   $\square$

	Ht.	Mean Ht.	Dist.	Area in sq. ft.
5134.4	550.0	550.0	0.0	

$$24 \times 56 = 1344$$

40	543	49.5	48
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50	62.0	49.3	127	$2545 \times 10 = 2545$
----	------	------	-----	-------------------------

60	69.7	49.0	207	$\times$
----	------	------	-----	----------

$$236 \times 75 = 17700$$

67.5	575.4	48.9	26.5
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$$267 \times 125 = 33375$$

80	575.4	48.5	26.9
----	-------	------	------

90	"	48.4	27.0
----	---	------	------

5200	"	48.3	27.1
------	---	------	------

10	"	48.2	27.2
----	---	------	------

20	"	48.5	26.9
----	---	------	------

30	575.4	548.6	26.8
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East N3680  
U.S. 61

	Ht.	Mean Ht.	Dist.	Area in sq. ft.
5240	575.4	549.0	26.4	
50	"	48.7	26.7	
60	"	48.4	27.0	
70	"	48.0	27.4	
80	"	47.8	27.6	
90	"	47.6	27.8	
5300	"	47.0	28.4	$6640.5 \times 10 = 66405$
10	"	46.7	28.7	
20	"	46.4	29.0	
30	"	47.3	28.1	
40	"	46.7	28.7	
50	"	47.1	28.3	
60	"	47.4	28.0	
70	"	47.2	28.2	
80	"	47.5	27.9	
90	"	47.5	27.9	
5400	"	46.9	28.5	
10	"	47.7	27.7	
20	575.4	548.8	26.6	$\times$



East

N3680

U.S.

Ht.

Mean Dist.

Area in  
sq. ft.

5430	575.4	549.0	26.4	
40	"	48.6	26.8	
50	"	48.9	26.5	$169.8 \times 10 = 1698.0$
60	"	48.0	27.4	
70	"	44.4	31.0	
80	575.4	538.6	36.8	

$$36.7 \times 11.1 = 407.4$$

$$265654$$

5491.1	575.4	538.8	36.6	
--------	-------	-------	------	--

above U.S. Toe Wall

5495.1	575.0	575.0	0.0	
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$$1435 \times 10.7 = 153.5$$

5505.8	71.7	43.0	28.7	
--------	------	------	------	--

$$33.4 \times 1.7 = 56.8$$

07.5	71.1	43.0	38.1	
------	------	------	------	--

07.5	71.1	41.0	30.1	
------	------	------	------	--

$$28 \times 12.5 = 350.0$$

20	66.7	40.8	25.9	
----	------	------	------	--

$$25.4 \times 6.3 = 160.0$$

26.3	564.6	539.7	24.9	
------	-------	-------	------	--

$$1765 \times 13.7 = 241.8$$

East

N3680

U.S.

Ht.

Mean Dist.

Area in  
sq. ft.

5540	559.9	549.5	10.4	
50	556.6	556.6	0.0	$5.2 \times 10 = 52.0$ $1014.1$

East

N3690

D.S.

below D.S. Toe Wall

4396.6	538.4	538.4	0.0	
--------	-------	-------	-----	--

$$3.05 \times 2.4 = 7.3$$

99	39.2	33.1	6.1	
----	------	------	-----	--

$$7.1 \times 6 = 42.6$$

4405	41.1	33.0	8.1	
------	------	------	-----	--

15	544.4	533.1	11.3	$21.9 \times 10 = 219.0$
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62



East	N3690			
	D.S.	Ht.	Mean Ht.	Dist. Area in sq. ft.
4425	547.7	534.6	13.1	
				$12.2 \times 5 = 61.0$
30	49.3	38.0	11.3	
40	52.6	38.4	14.2	
50	55.9	38.1	17.8	
60	59.1	37.2	21.9	$124.5 \times 10 = 1245.0$
70	62.4	37.9	24.5	
80	65.7	39.9	25.8	
90	69.0	39.7	29.3	
				$30.25 \times 6 = 181.5$
96	571.1	39.9	31.3	
96	571.1	43.0	28.1	
				$28.25 \times 1.4 = 39.6$
97.4	71.4	43.0	28.4	
				$14.2 \times 10.8 = 153.4$
4508.2	575.0	575.0	0.0	$1949.4$
4512.3	575.5	539.1	36.4	
				$36.55 \times 7.7 = 281.4$
20	575.5	538.8	36.7	

East	N3690			
	D.S.	Ht.	Mean Ht.	Dist. Area in sq. ft.
4530	575.5	540.0	35.5	
40	"	44.8	30.7	
50	"	42.3	33.2	
60	"	42.3	33.3	
70	"	42.1	33.4	
80	"	42.2	33.3	
90	"	42.6	32.9	
4600	"	42.0	33.5	$558.5 \times 10 = 5581.5$
10	"	42.0	33.5	
20	"	42.0	33.5	
30	"	42.2	33.3	
40	"	42.2	33.3	
50	"	42.0	33.5	
60	"	42.7	32.8	
70	"	45.8	29.7	
80	"	45.9	29.6	
90	575.5	545.7	29.8	
				$29.75 \times 11.4 = 339.2$
4701.4	575.5	545.8	29.7	
				$25.3 \times 8.6 = 217.6$



East.	N3690			
	D.S.	Ht.	Mean Dist.	Area in sq. ft.
4710	566.9	546.0	20.9	
20	56.9	48.7	8.2	$14.55 \times 10 = 145.5$
				$4.1 \times 7.5 = 30.8$
4727.5	549.4	549.4	0.0	

$$\text{From } 575.5 \text{ to } 600.9 = \frac{184.5 + 84.1}{2} \times 25.4 = 3411.2$$

$$\text{" } 600.9 \text{ to } 651.5 = \frac{75 + 60}{2} \times 50.6 = 3415.5$$

$$\text{" } 651.5 \text{ to } 702.2 = \frac{50 + 40}{2} \times 50.7 = 2281.5$$

$$\hline 15704.6$$

East	N3690			
	U.S.	Ht.	Mean Dist.	Area in sq. ft.
From	651.5 to 702.3	90	$\frac{43.5}{2}$	$90 \times 43.5 \times 50.8 = 3390.9$
"	626.1 to 651.5	111.65	$\frac{100}{2}$	$111.65 \times 100 \times 25.4 = 2835.9$
"	600.8 to 626.1	157.5	$\frac{109.9}{2}$	$157.5 \times 109.9 \times 25.3 = 3984.8$
"	575.5 to 600.8	269.5	$\frac{215.1}{2}$	$269.5 \times 215.1 \times 15.3 = 6807.0$

	Ht.	Mean Dist.	Area in sq. ft.
5133.7	549.1	549.1	0.0
			$2.7 \times 6.8 = 18.4$
40	54.3	48.9	5.4
50	62.0	48.9	13.1
			$26.2 \times 10 = 262.0$
60	69.7	48.9	20.8
			$23.85 \times 7.7 = 183.6$
67.7	575.5	48.6	26.9
			$26.95 \times 12.3 = 331.5$
80	575.5	48.5	27.0
90	"	48.2	27.3
5200	"	48.0	27.5
10	"	48.0	27.5
			$27.5 \times 63.75 \times 10 = 1637.5$
20	"	48.0	27.5
30	"	48.4	27.1
40	575.5	548.8	26.7



East	N3690		Ht.	Mean Dist Ht.	Area in sq. ft.
	U.S.	Ht.			
5250	575.5	548.4	27.1		
60	"	48.0	27.5		
70	"	47.9	27.6		
80	"	47.6	27.9		
90	"	47.7	27.8		
5300	"	47.5	28.0		
10	"	47.3	28.2		
20	"	47.2	28.3		
30	"	47.8	27.7		
40	"	47.5	28.0		
50	"	47.3	28.2		
60	"	47.3	28.2		
70	"	47.3	28.2		
80	"	47.2	28.3		
90	"	47.6	27.9		
5400	"	47.6	27.9		
10	"	47.6	27.9		
20	"	48.1	27.4		
30	575.5	548.5	27.0		
	✓	✓	✓	✓	✓

$$677.05 \times 10 = 6770.5$$

East	N3690		Ht.	Mean Dist Ht.	Area in sq. ft.
	U.S.	Ht.			
5440	575.5	548.7	26.8		
50	"	49.2	26.3		
60	"	46.2	29.3		
70	"	41.4	34.1		
80	575.5	39.3	36.2		
					$36.25 \times 11.6 = 421.7$
5491.6	575.5	539.0	36.5		$26644.6$
above U.S. Top Wall					
5495.6	575.0	575.0	0.0		
					$19.2 \times 10.7 = 205.4$
5506.3	71.4	43.0	38.4		
					$33.15 \times 1.6 = 53.0$
07.9	70.9	43.0	27.9		
07.9	70.9	41.6	29.3		
					$27.4 \times 12.1 = 331.5$
20	66.9	41.4	25.5		
					$24.05 \times 9. = 216.4$
29	63.2	40.6	22.6		
					$17.3 \times 11. = 190.3$
40	560.2	548.2	120		
	✓	✓	✓	✓	$6. \times 11.7 = 70.2$



East

N3690

U.S.

Ht.

Mean

Dist.

Area in  
sq. ft.

5551.7

556.3

556.3

0.0

 $\frac{1066.8}{17}$ 

East

N3700

D.S.

Ht.

Mean

Dist.

Area in  
sq. ft.

4430

550.0

538.5

11.5

40

53.2

38.7

14.5

50

56.5

37.4

19.1

60

59.8

37.4

22.4

70

63.0

38.5

24.5

80

66.3

40.5

25.8

90

69.6

40.5

29.1

 $29.9 \times 4.5 = 134.6$ 

94.5

71.1

40.4

30.7

94.5

71.1

43.0

28.1

 $28.25 \times 1.1 = 31.1$ 

95.6

71.4

43.0

28.4

 $14.2 \times 10.9 = 153.4$ 

4506.5

575.0

575.0

0.0

 $\frac{1911.2}{17}$ 

4510.6

575.5

539.5

36.0

 $36.1 \times 9.4 = 339.3$ 

20

575.5

39.3

36.2

 $35.65 \times 10 = 356.5$ 

30

575.5

540.4

35.1

East

N3700

D.S.

Below D.S. Toe Wall

4394

538.2

538.2

0.0

 $3.05 \times 3 = 9.2$ 

97

39.2

33.1

6.1

 $9.1 \times 19 = 172.9$ 

4416

45.4

33.3

12.1

 $10.85 \times 3 = 32.6$ 

19

46.4

36.8

9.6

 $9.7 \times 6 = 58.2$ 

25

548.4

538.6

9.8

 $10.65 \times 5 = 53.2$



East	N3700		Ht.	Mean Ht.	Dist.	Area in sq. ft.
	D.S.	Ht.				
4540	575.5	540.8	34.7			
50	"	40.8	34.7			
60	"	41.0	34.5			
70	"	40.9	34.6			
80	"	41.0	34.5			
90	"	41.0	34.5			
4600	"	41.0	34.5			
10	"	40.9	34.6	$563.9 \times 10 = 5639.0$		
20	"	40.9	34.6			
30	"	40.9	34.6			
40	"	40.7	34.8			
50	"	40.7	34.8			
60	"	40.9	34.6			
70	"	47.7	27.8			
80	"	47.7	27.8			
90	"	47.8	27.7			
4700	"	49.4	26.1			
				$26.05 \times 1.4 = 36.5$		
01.4	575.5	549.5	26.0		$21.45 \times 8.6 = 184.5$	

East	N3700		Ht.	Mean Ht.	Dist.	Area in sq. ft.
	D.S.	Ht.				
4710	566.9	550.0	16.9		$12.35 \times 10 = 123.5$	
20	56.9	49.1	7.8		$3.9 \times 7.4 = 28.9$	
27.4	549.5	549.5	0.0			
From	575.5 to 600.7	$\frac{184.5 + 84.3}{2} \times 25.2 = \frac{3386.9}{2} = 1693.45$				
"	600.7 to 651.5	$\frac{75 + 60}{2} \times 50.8 = 3429.0$				
"	651.5 to 702.1	$\frac{50 + 40}{2} \times 50.6 = 2277.0$				
						$15801.4$



East

N3700

U.S.

$From\ 651.5\ to\ 702.2 = \frac{90.1 + 43.5}{2} \times 50.7 = 3986.8\ sq.\ ft$   
 $"\ 626.0\ to\ 651.5 = \frac{128.4 + 100.1}{2} \times 25.5 = 2996.2\ " "$   
 $"\ 600.7\ to\ 626.0 = \frac{205.3 + 110.1}{2} \times 25.3 = \frac{3189.8}{0.6} = 5316.3\ " "$   
 $"\ 575.4\ to\ 600.7 = \frac{323.1 + 215.3}{2} \times 25.3 = 6810.8\ " "$

	Ht.	Mean Ht.	Dist	Area in sq. ft.
5133.0	548.9	548.9	0.0	

$$275 \times 7 = 192$$

40	54.3	48.8	5.5
----	------	------	-----

50	62.0	48.5	13.5	$26.9 \times 10 = 269.0$
----	------	------	------	--------------------------

60	69.7	48.4	21.3
----	------	------	------

$$24.25 \times 7.5 = 181.9$$

67.5	575.4	48.2	27.2
------	-------	------	------

$$2725 \times 12.5 = 3406$$

80	"	48.1	27.3
----	---	------	------

90	"	47.9	27.5
----	---	------	------

5200	"	48.4	27.0
------	---	------	------

10	"	48.0	27.4
----	---	------	------

20	"	47.9	27.5
----	---	------	------

30	575.4	548.3	27.1
----	-------	-------	------

✓

✓

✓

✓

✓

✓

East

N3700

U.S.

Ht.

Mean Ht.

Dist

Area in sq. ft.

68

5240	575.4	548.2	27.2
------	-------	-------	------

50	"	48.2	27.2
----	---	------	------

60	"	48.3	27.1
----	---	------	------

70	"	47.5	27.9
----	---	------	------

80	"	48.0	27.4
----	---	------	------

90	"	48.0	27.4
----	---	------	------

5300	"	47.7	27.7
------	---	------	------

10	"	47.4	28.0
----	---	------	------

20	"	47.5	27.9
----	---	------	------

30	"	47.1	28.3
----	---	------	------

40	"	48.3	27.1
----	---	------	------

50	"	47.8	27.6
----	---	------	------

60	"	47.6	27.8
----	---	------	------

70	"	47.7	27.7
----	---	------	------

80	"	47.6	27.8
----	---	------	------

90	"	47.3	28.1
----	---	------	------

5400	"	47.1	28.3
------	---	------	------

10	"	48.2	27.2
----	---	------	------

20	575.4	547.4	28.0
----	-------	-------	------

✓

✓

✓

✓

✓

✓

$$66.85 \times 10 = 668.5$$



East		N3700			
	U.S.	Ht.	Mean Dist. Ht.	Area in Sq. ft.	
5430	575.4	548.4	27.0		
40	"	48.1	27.3		
50	"	48.2	27.2	$1748.5 \times 10 = 17485$	
60	"	47.6	27.8		
70	"	41.3	34.1		
80	575.4	40.5	34.9	x	
				$35 \times 123 = 430.5$	
97.3	575.4	540.3	35.1	$26,792.4$ ✓	

above U.S. Toe Wall

5496.3	575.0	575.0	0.0	
				$14.2 \times 10.7 = 151.9$
5507	71.4	43.0	28.4	
				$28.2 \times 1.2 = 33.8$
5508.2	71.0	43.0	28.0	
5508.2	71.0	42.3	28.7	
				$2685 \times 11.8 = 3168$
20	67.1	42.1	25.0	
				$23.6 \times 9 = 212.4$
29	563.5	541.3	22.2	
				$17 \times 11 = 187.0$

East		N3700				End of May 1. 34	
	U.S.	Ht.	Mean Dist. Ht.	Area in Sq. ft.			
5540	560.5	548.7	11.8			J.W.W. 69	
					$5.9 \times 11.8 = 69.6$		
51.8	556.6	556.6	0.0			$971.5$ ✓	

East		N3710				May 2. 34 J.W.W.	
	Below U.S. Toe Wall	D.S.	Ht.	Mean Dist. Ht.	Area in Sq. ft.		
4392.9	538.9	538.9	0.0				
					$2.95 \times 3.1 = 9.1$		
96	39.9	34.0	5.9				
					$7.4 \times 9 = 66.6$		
4405	42.8	33.9	8.9				
					$10.45 \times 10 = 104.5$		
15	546.0	534.0	12.0				
					$10.15 \times 5 = 50.8$		







East

N3710  
D.S.

Ht.

Mean Dist.

Area in  
Sq. ft.

4710	566.9	550.5	16.4	
20	56.9	49.9	7.0	
				$11.7 \times 10 = 117.0$
				$3.5 \times 7 = 24.5$
4727	549.9	549.9	0.0	

From	575.5 to 600.7	$\frac{184.5 + 84.3}{2} \times 25.2 = 3386.9$	"
"	600.7 to 651.5	$\frac{75 + 60}{2} \times 50.8 = 3429.0$	"
"	651.5 to 702.1	$\frac{50 + 40}{2} \times 50.6 = 2277.0$	"
		<u>15407.4</u>	

N3710  
U.S.

71

From	651.5 to 702.2	$\frac{89.9 + 43.5}{2} \times 50.7 = 3381.7$	Sq. ft
"	626.2 to 651.5	$\frac{123 + 99.9}{2} \times 25.3 = 2819.7$	" "
"	600.8 to 626.2	$\frac{205.1 + 109.5}{2} \times 25.4 = 3995.4$	" "
"	575.4 to 600.8	$\frac{323.1 + 215.1}{2} \times 25.4 = 6835.1$	" "

51328	548.8	548.8	0.0	Ht.	Mean Dist.	Area in Sq. ft.
						$2.7 \times 7.2 = 19.4$
40	543	489	5.4			
50	62.0	486	134	$26.65 \times 10 = 266.5$		
60	69.7	486	21.1			$24.15 \times 7.5 = 181.1$
67.5	575.4	48.7	27.2			$27.25 \times 2.5 = 68.1$
70	575.4	48.1	27.3			
80	"	47.8	27.6			
90	"	47.8	27.6			
5200	"	47.8	27.6			$1381 \times 10 = 1381.0$
10	"	47.7	27.7			
20	575.4	547.5	27.9			



East	N3710 U.S.	Ht.	Mean Ht.	Dist.	Area in sq. ft.
5230	575.4	547.6	27.8		
40	"	47.8	27.6		
50	"	48.0	27.4		
60	"	48.3	27.1		
70	"	47.6	27.8		
80	"	47.5	27.9		
90	"	48.6	26.8		
5300	"	47.7	27.7		
10	"	47.6	27.8		
20	"	48.4	27.0		
30	"	47.8	27.6		
40	"	47.7	27.7		
50	"	47.8	27.6		
60	"	48.0	27.4		
70	"	47.9	27.5		
80	"	48.1	27.3		
90	"	47.4	28.0		
5400	"	47.1	28.3		
10	575.4	547.1	28.3		

$$7247 \times 10 = 72470$$

East	N3710 U.S.	Ht.	Mean Ht.	Dist.	Area in sq. ft.
5420	575.4	547.0	28.4		
30	"	47.6	27.8		
40	"	47.8	27.6		
50	"	48.8	26.6		
60	"	49.7	25.7		
70	"	42.4	33.0		
80	"	41.3	34.1		
93.2	575.4	541.4	34.0		
above U.S. Top Wall					
5497.2	575.0	575.0	0.0		
5507.9	71.4	43.0	28.4		
08.8	71.1	43.0	28.1		
08.8	71.1	42.6	28.5		
10	70.7	42.6	28.1		
20	567.4	543.1	24.3		

$$\begin{array}{r} 34.05 \times 13.2 = 449.5 \\ \hline 266454^{\circ} \end{array}$$

$$14.2 \times 10.7 = 151.9$$

$$28.25 \times 0.9 = 25.4$$

$$28.3 \times 1.2 = 34.0$$

$$49.3 \times 10 = 493.0$$



East

N3710  
U.S.Ht. Mean Dist Area in  
Ht. Sq. ft.

5530	564.1	542.7	21.9		
				$21.85 \times 1 = 21.8$	
31	63.8	42.0	21.8		
				$17.35 \times 9 = 156.2$	
40	60.8	47.9	12.9		
				$7.95 \times 10 = 79.5$	
50	57.5	54.5	3.0		
				$1.5 \times 3 = 4.5$	
53	556.5	556.5	0.0		
				$966.3^{\circ}$	

East

N3720  
D.S.

73

Below D.S. Toe Wall

Ht. Mean Dist Area in  
Ht. Sq. ft.

4390.7	539.2	539.2	0.0		
				$1.4 \times 1.3 = 1.8$	
92	39.6	36.8	2.8		
				$5.25 \times 8 = 42.0$	
4400	42.2	34.5	7.7		
				$9.35 \times 10 = 93.5$	
10	45.4	34.4	11.0		
				$11.8 \times 5 = 59.0$	
15	47.0	34.4	12.6		
				$9.95 \times 3 = 29.8$	
18	48.0	40.7	7.3		
				$7.5 \times 3 = 22.5$	
21	48.9	41.2	7.7		
				$9 \times 2 = 18.0$	
23	49.6	39.3	10.3		
				$11.4 \times 7 = 79.8$	
30	51.8	39.3	12.5		
35	53.4	39.5	13.9		
				$28.55 \times 5 = 142.8$	
40	55.5	538.7	16.8		



East

N3720

D.S.

Ht. Mean Dist Area in  
Ht. 59 ft

4450	558.3	538.3	20°
60	61.4	37.6	23.8
70	64.6	39.1	25.5
80	67.8	41.8	26.0
90	71.0	41.8	29.2

$118.3 \times 10 = 1183.0$

$29.25 \times 0.5 = 14.6$

90.5	71.1	41.8	29.3
------	------	------	------

90.5	71.1	43.0	28.1
------	------	------	------

$28.3 \times 1 = 28.3$

91.5	71.5	43.0	28.5
------	------	------	------

$14.25 \times 10.9 = 155.3$

45024	575.0	575.0	0.0
-------	-------	-------	-----

$1870.4^2$

4506.5	575.5	541.1	34.4
--------	-------	-------	------

$34.75 \times 13.5 = 469.1$

20	575.5	46.4	35.1
----	-------	------	------

30	"	41.9	33.6
----	---	------	------

40	"	43.9	31.6
----	---	------	------

50	575.5	543.5	32.0
----	-------	-------	------

✓	✓	✓	✓	✓	✓
---	---	---	---	---	---

East

N3720

D.S.

Ht. Mean Dist Area in  
Ht. 39 ft

4560	575.5	542.7	32.8
70	"	42.5	33.0
80	"	42.4	33.1
90	"	44.0	31.5
4600	"	43.2	32.3

$526.85 \times 10 = 5268.5$

10	"	43.9	31.6
----	---	------	------

20	"	45.1	30.4
----	---	------	------

30	"	46.1	28.6
----	---	------	------

40	"	48.6	26.9
----	---	------	------

50	"	47.9	27.6
----	---	------	------

60	"	48.3	27.2
----	---	------	------

70	"	51.5	24.0
----	---	------	------

80	"	52.6	22.9
----	---	------	------

90	"	56.8	18.7
----	---	------	------

4700	"	52.5	23.0
------	---	------	------

4701.4	575.5	552.4	23.1
--------	-------	-------	------

$23.05 \times 1.4 = 32.3$

$193 \times 8.6 = 166.0$

10	66.9	51.4	15.5
----	------	------	------

$10.9 \times 10 = 109.0$

20	56.9	50.6	6.3
----	------	------	-----

$3.15 \times 6.4 = 20.2$

26.4	550.5	550.5	0.0
------	-------	-------	-----

✓	✓	✓	✓	✓	✓
---	---	---	---	---	---

74



East

N3720  
D.S.

$$\begin{aligned} \text{From } 575.5 \text{ to } 600.8 &= 184.5 + 84.2 \times 25.3 = 3399.1 \\ \text{" } 600.8 \text{ to } 651.5 &= 75 + 60 \times 50.7 = 3422.3 \\ \text{" } 651.5 \text{ to } 702.1 &= 50 + 40 \times 50.6 = 2277.0 \end{aligned}$$

15 163.8

East

N3720  
U.S.

$$\begin{aligned} \text{From } 651.5 \text{ to } 702.2 &= 89.9 + 43.5 \times 50.7 = 3381.7 \\ \text{" } 626.2 \text{ to } 651.5 &= 123 + 99.9 \times 25.3 = 2819.7 \\ \text{" } 600.8 \text{ to } 626.2 &= 205.1 + 109.4 \times 25.4 = 3994.1 \\ \text{" } 575.4 \text{ to } 600.8 &= 323.1 + 215.1 \times 25.4 = 6835.1 \end{aligned}$$

Ht. Mean Dist Area in  
Ht. Sq. ft.5132.1 548.2 548.2 0°  
2.8 x 7.9 = 22.1

N3720

U.S.

75

East

	Ht.	Mean Dist Ht.	Area in Sq. ft.
5140	554.3	548.7	56
50	62.0	48.9	13' 26.7 x 10 = 264.0
60	69.7	48.7	21.0 x 24.05 x 7.5 = 180.4
67.5	575.4	48.3	27.1 x 27.5 x 2.5 = 67.9
70	575.4	48.2	27.2
80	"	47.6	27.8
90	"	47.5	27.9
5200	"	47.5	27.9
10	"	47.5	27.9
20	"	47.4	28.0
30	"	47.5	27.9
40	"	47.8	27.6
50	"	47.9	27.5
60	"	47.6	27.8
70	"	47.2	28.2
80	"	47.3	28.1
90	"	48.0	27.4
5300	"	47.1	28.3
10	"	48.1	27.3
20	575.4	547.2	28.2 x

4173 x 10 = 4173.0



East

N3720

U.S.

Ht.

Mean Dist.  
Ht.Area in  
sq. ft.

5330 575.4 547.9 27.5

40 " 47.7 27.7

50 " 47.6 27.8

60 " 47.9 27.5

70 " 48.1 27.3

80 " 48.1 27.3

90 " 47.3 28.1

5400 " 47.1 28.3

10 " 47.0 28.4

20 " 46.9 28.5

30 " 47.0 28.4

40 " 47.4 28.0

50 " 47.5 27.9

60 " 48.6 26.8

70 " 44.4 31.0

80 " 42.0 33.4

90 575.4 542.0 33.4

$$4847 \times 10 = 4847.0$$

5494.3 575.4 542.0 33.4

$$33.4 \times 43 = 143.6$$

$$26729.5 \checkmark$$

N3720

U.S.

Ht.

Mean Dist.  
Ht.Area in  
sq. ft.

Above U.S. Toe Wall

5498.3 575.0 575.0 0.0

5508 71.8 46.0 25.8

09.6  $\checkmark$  71.2 46.0 25.209.6  $\wedge$  71.2 43.5 27.7

10 71.1 43.5 27.6

20 67.8 44.0 23.8

30 64.5 41.8 22.7

33 63.5 42.3 21.2

40 61.2 46.8 14.4

50 57.9 53.3 4.6

54.7 556.3 556.3 0.0

$$12.9 \times 9.7 = 125.1$$

$$25.5 \times 1.6 = 40.8$$

$$27.65 \times 0.4 = 11.1$$

$$23.8 \times 10 = 238$$

$$48.95 \times 10 = 489.5$$

$$21.95 \times 3 = 65.8$$

$$17.8 \times 7 = 124.6$$

$$9.5 \times 10 = 95.0$$

$$2.3 \times 4.7 = 10.8$$

$$962.7 \checkmark$$

76



East	N3730			Ht.	Mean Dist.	Area in
Below D.S. Toe Wall	D.S.	Ht.	Mean Dist.	Ht.	Area in	Sq. ft.
4389.5	539.8	539.8	00			
					$305 \times 5 = 15.2$	
94.5	41.4	35.3	61			
					$8 \times 0.5 = 4.0$	
05	44.7	34.8	99			
					$11.35 \times 9 = 102.2$	
14	47.5	34.7	128			
					$10.55 \times 3 = 31.6$	
17	48.5	40.2	8.3			
					$91 \times 3 = 27.3$	
20	49.4	39.5	9.9			
					$11.55 \times 10 = 115.5$	
30	52.6	39.4	13.2			
35	554.2	539.6	14.6		$301 \times 5 = 150.5$	

East	N3730			Ht.	Mean Dist.	Area in
	D.S.	Ht.	Mean Dist.	Ht.	Area in	Sq. ft.
4440	555.8	538.0	17.8			
50	59.0	38.6	20.4			
60	62.2	38.3	23.9		$89.7 \times 10 = 897.0$	
70	65.4	42.0	23.4			
80	68.7	42.5	26.2			
					$37.5 \times 8.3 = 311.7$	
88.3	71.4	42.5	48.9			
88.3	71.4	43.0	28.4			
					$28.5 \times 0.6 = 17.1$	
88.9	71.6	43.0	28.6			
					$14.3 \times 11 = 157.3$	
99.9	575.0	575.0	0.0			$1829.4^{\square}$
450.4	575.4	541.7	33.7			
					$33.85 \times 6 = 203.1$	
10	575.4	41.4	34.0			
20	"	41.2	34.2			
30	"	44.4	31.0		$128.85 \times 10 = 1288.5$	
40	"	44.2	31.2			
50	575.4	544.5	30.9			







East

N3730

U.S.

H. Mean. Dist. Area

J.W.K.  
July 1934

5150	562.0	548.8	132	
60	569.7	48.5	21.2	$26.5 \times 10 = 265.0$
67.5	575.4	48.0	27.4	$24.3 \times 7.5 = 182.2$
70	"	47.9	27.5	$27.45 \times 2.5 = 68.6$
80	"	47.3	28.1	
90	"	47.3	28.1	
5200	"	47.2	28.2	
10	"	47.4	28.0	
20	"	47.8	27.6	
30	"	48.1	27.3	
40	"	47.8	27.6	$4443.5 / 10 = 444.35$
50	"	48.5	26.9	
60	"	47.8	27.6	
70	"	47.5	27.9	
80	"	47.5	27.9	
90	"	47.5	27.9	
5300	"	47.5	27.9	
10	"	47.1	28.3	
20	"	47.6	27.8	
30	575.4	548.4	27.0	

See Book 464 Carry (13.5) ahead

562.0

569.7



DISTANCES FROM CENTER OF ROADWAY FOR CROSS-SECTIONING.

ROADWAY 14 FEET WIDE. SIDE SLOPES 1 1/2 TO 1.

FOR SINGLE TRACK EMBANKMENT.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	7.0	7.2	7.3	7.5	7.6	7.8	7.9	8.1	8.2	8.4	0
1	8.5	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.7	9.9	1
2	10.0	10.2	10.3	10.5	10.6	10.8	10.9	11.1	11.2	11.4	2
3	11.5	11.7	11.8	12.0	12.1	12.3	12.4	12.6	12.7	12.9	3
4	13.0	13.2	13.3	13.5	13.6	13.8	13.9	14.1	14.2	14.4	4
5	14.5	14.7	14.8	15.0	15.1	15.3	15.4	15.6	15.7	15.9	5
6	16.0	16.2	16.3	16.5	16.6	16.8	16.9	17.1	17.2	17.4	6
7	17.5	17.7	17.8	18.0	18.1	18.3	18.4	18.6	18.7	18.9	7
8	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.1	20.2	20.4	8
9	20.5	20.7	20.8	21.0	21.1	21.3	21.4	21.6	21.7	21.9	9
10	22.0	22.2	22.3	22.5	22.6	22.8	22.9	23.1	23.2	23.4	10
11	23.5	23.7	23.8	24.0	24.1	24.3	24.4	24.6	24.7	24.9	11
12	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.2	26.4	12
13	26.5	26.7	26.8	27.0	27.1	27.3	27.4	27.6	27.7	27.9	13
14	28.0	28.2	28.3	28.5	28.6	28.8	28.9	29.1	29.2	29.4	14
15	29.5	29.7	29.8	30.0	30.1	30.3	30.4	30.6	30.7	30.9	15
16	31.0	31.2	31.3	31.5	31.6	31.8	31.9	32.1	32.2	32.4	16
17	32.5	32.7	32.8	33.0	33.1	33.3	33.4	33.6	33.7	33.9	17
18	34.0	34.2	34.3	34.5	34.6	34.8	34.9	35.1	35.2	35.4	18
19	35.5	35.7	35.8	36.0	36.1	36.3	36.4	36.6	36.7	36.9	19
20	37.0	37.2	37.3	37.5	37.6	37.8	37.9	38.1	38.2	38.4	20
21	38.5	38.7	38.8	39.0	39.1	39.3	39.4	39.6	39.7	39.9	21
22	40.0	40.2	40.3	40.5	40.6	40.8	40.9	41.1	41.2	41.4	22
23	41.5	41.7	41.8	42.0	42.1	42.3	42.4	42.6	42.7	42.9	23
24	43.0	43.2	43.3	43.5	43.6	43.8	43.9	44.1	44.2	44.4	24
25	44.5	44.7	44.8	45.0	45.1	45.3	45.4	45.6	45.7	45.9	25
26	46.0	46.2	46.3	46.5	46.6	46.8	46.9	47.1	47.2	47.4	26
27	47.5	47.7	47.8	48.0	48.1	48.3	48.4	48.6	48.7	48.9	27
28	49.0	49.2	49.3	49.5	49.6	49.8	49.9	50.1	50.2	50.4	28
29	50.5	50.7	50.8	51.0	51.1	51.3	51.4	51.6	51.7	51.9	29
30	52.0	52.2	52.3	52.5	52.6	52.8	52.9	53.1	53.2	53.4	30
31	53.5	53.7	53.8	54.0	54.1	54.3	54.4	54.6	54.7	54.9	31
32	55.0	55.2	55.3	55.5	55.6	55.8	55.9	56.1	56.2	56.4	32
33	56.5	56.7	56.8	57.0	57.1	57.3	57.4	57.6	57.7	57.9	33
34	58.0	58.2	58.3	58.5	58.6	58.8	58.9	59.1	59.2	59.4	34
35	59.5	59.7	59.8	60.0	60.1	60.3	60.4	60.6	60.7	60.9	35
36	61.0	61.2	61.3	61.5	61.6	61.8	61.9	62.1	62.2	62.4	36

Calculated by Julien A. Hall, M. Am. Soc. C. E.

MADE IN GERMANY.