Annotated 1993 ASHRAE Spread Sheet

	A	B	C	D	E	F	G	H
1	*Larger Bldg. Dimension*	**20**	ft.					
2	*Smaller Bldg. Dimension*	**10**	ft.					
3	*Exhaust flow*	**1000**	cfm					
4	*Exhaust dia.*	**6**	ins.					
5	Exhaust area	0.19635	Ae, in sq. ft.					
6	Exhaust velocity	5092.958	Ve, in fpm					
7	*Stack height*	**25**	S, in ft.					
8	*In stack dilution*	**1000**						
9	Scaling dimension	12.59921	R (eq. 1)	*=$C$1^(1/3)*$C$2^(2/3)*				
10	Max height of edge burble	2.771826	Hc (eq. 2)	*=0.22*$C$11*				
11	Distance to max' height	6.299605	Xc (eq. 3)	*=0.5*$C$11*				
12	Length of edge burble	11.33929	Lc (eq. 4)	*=0.9*$C*11*				
13	Length of building lee side turbulence burble	12.59921	Lr (eq. 5)	*=$C$11*				
14								
15								
16	*Distance*							
17	*Stretched string distance, S*	**10**	**20**	**30**	**40**	**50**	**60**	**70**
18								
19	*C20/($C$6^0.5)* S / Ae^0.5	22.56758	45.1351664	67.7027	90.2703	112.838	135.405	157.973
20	eq. 22 *=$C$7*2.9*(0.0625^(-1/3))*(C22^(-2/3))* Ucrit, o	4660.345	2935.83333	2240.46	1849.46	1593.82	1411.4	1273.56
21	eq. 23 *=1+7*(0.0625^(2/3))*C22^(1+(1/3))* Dcrit,o	71.30693	178.162356	305.2	447.421	602.116	767.537	942.446
22								
23	*Obstacle height, ft.*	**10**	**10**	**10**	**10**	**10**	**10**	**10**
24	*=$C$8-C26* Effective height, hs, in ft.	15	15	15	15	15	15	15
25								
26	text of p. 14.13 *=12.6*((C27/C20)^2)* Y = 12.6*(hs / S)^2	28.35	7.0875	3.15	1.77188	1.134	0.7875	0.57857
27	*Entered Y (can't >2)*	**2**	**2**	**2**	**1.7719**	**1.134**	**0.7875**	**0.5786**
28								

	A	B	C	D	E	F	G	H
29	eq. 27 *=C23/(((C30+1)^0.5)-(C30^0.5))* Ucrit	14662.68	9236.90782	7049.08	5541	4025.53	3139.5	2568.84
30								
31	eq. 28							

	*=C24*C32*(EXP(C30+(C30^0.5)*((C30+1)^0.5)))/C23*							
	Dcrit	**19200.6**	**47973.35**	**82181**	**72318**	**22395**	**12291**	**8816.3**
32								
33	*=C35*$C$9*							
	Dtot	***2E+07***	***4.8E+07***	***8E+07***	***7E+07***	***2E+07***	***1E+07***	***9E+06***

	I	J	K	L	M	N	O	P	Q
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17	80	90	100	110	120	130	140	150	200
18									
19	180.541	203.108	225.676	248.243	270.811	293.379	315.946	338.514	451.352
20	1165.09	1077.1	1004.04	942.229	889.127	842.925	802.292	766.227	632.506
21	1125.91	1317.2	1515.72	1720.97	1932.55	2150.1	2373.3	2601.88	3817.85
22									
23	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
24	15	15	15	15	15	15	15	15	15
25									
26	0.44297	0.35	0.2835	0.2343	0.19688	0.16775	0.14464	0.126	0.07088
27	**0.4430**	**0.35**	**0.2835**	**0.2343**	**0.19688**	**0.1678**	**0.1446**	**0.126**	**0.0709**
28									

	I	J	K	L	M	N	O	P	Q
29	2174.98	1888.7	1672.09	1502.89	1367.23	1256.13	1163.48	1085.05	822.925
30									
31	**7281.1**	**6517.6**	**6126.7**	**5940.8**	**5879.3**	**5898.9**	**5974.6**	**6090.9**	**7023.3**
32									
33	***7E+06***	***7E+06***	***6E+06***	***6E+06***	***6E+06***	***6E+06***	***6E+06***	***6E+06***	***7E+06***