direct radiation[3] (*abbreviated EDR*) per hour. The drops indicated are drops in pressure per 100 ft of equivalent length of run. The pipe is assumed to be well reamed and without unusual or noticeable defects.

Table 4 may be used for sizing piping for steam heating systems by pre-determining the allowable or desired pressure drop per 100 equivalent feet of run and reading from the column for that particular pressure drop. This applies to all steam mains on both one-pipe and two-pipe systems, vapor systems, and vacuum systems. Columns *B* to *G*, inclusive, are used

TABLE 4. STEAM PIPE CAPACITIES

Capacity Expressed in Square Feet of Equivalent Direct Radiation

(Reference to this table will be by column letter *A* through *L*)

This table is based on pipe size data developed through the research investigations of the AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.

CAPACITIES OF STEAM MAINS AND RISERS									SPECIAL CAPACITIES FOR ONE-PIPE SYSTEMS ONLY		
	DIRECTION OF CONDENSATION FLOW IN PIPE LINE										
	With the Steam in One-Pipe and Two-Pipe Systems						Against the Steam Two-Pipe Only				
PIPE SIZE IN.	1/32 lb or 1/4 Oz Drop	1/24 lb or 2/5 Oz Drop	1/16 lb or 1 Oz Drop	1/8 lb or 2 Oz Drop	1/4 lb or 4 Oz Drop	1/2 lb or 8 Oz Drop	Vertical	Horizontal	Supply Risers Up-Feed	Radiator Valves and Vertical Connections	Radiator and Riser Runouts
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*[a]	*I*[a]	*J*[b]	*K*	*L*[c]
3/4	.....	.....	30	.....	.....	.....	30	.....	25	.....	.....
1	39	46	56	79	111	157	56	34	45	28	28
1 1/4	87	100	122	173	245	346	122	75	98	62	62
1 1/2	134	155	190	269	380	538	190	108	152	93	93
2	273	315	386	546	771	1,091	386	195	288	169	169
2 1/2	449	518	635	898	1,270	1,800	635	395	464	.....	260
3	822	948	1,160	1,650	2,330	3,290	1,130	700	.....	.....	475
3 1/2	1,230	1,420	1,740	2,460	3,470	4,910	1,550	1,150	1,140	.....	745
4	1,740	2,010	2,460	3,480	4,910	6,950	2,040	1,700	1,520	.....	1,110
5	3,210	3,710	4,550	6,430	9,090	12,900	.....	3,150	.....	.....	2,180
6	5,280	6,100	7,460	10,550	14,900	21,100	.....	.....	.....	.....	.....
8	11,000	12,700	15,500	21,970	31,070	43,900	.....	.....	.....	.....	.....
10	20,000	23,100	28,300	40,100	56,700	80,200	.....	.....	.....	.....	.....
12	32,000	37,100	45,500	64,300	91,000	129,000	.....	.....	.....	.....	.....
16	61,000	69,700	84,800	121,000	170,000	242,000	.....	.....	.....	.....	.....
	All Horizontal Mains and Down-Feed Risers						Up-Feed Risers	Mains and Undripped Runouts	Up-Feed Risers	Radiator Connections	Runouts Not Dripped

Note.—All drops shown are in pounds per 100 ft of equivalent run—based on pipe properly reamed.

[a] Do not use Column *H* for drops of 1/24 or 1/32 lb; substitute Column *C* or Column *B* as required.

[b] Do not use Column *J* for drop of 1/32 lb except on sizes 3 in. and over; below 3 in. substitute Column *B*.

[c] On radiator runouts over 8 ft long increase one pipe size over that shown in Table 6.

where the steam and condensation flow in the same direction, while Columns *H* and *I* are for cases where the steam and condensation flow in opposite directions, as in risers and runouts that are not dripped. Columns *J*, *K*, and *L* are for one-pipe systems and cover riser, radiator valve and vertical connection sizes, and radiator and runout sizes, all of which are based on the critical velocities of the steam to permit the counter flow of condensation without noise.

[3] As steam system design has materially changed in recent years so that 240 Btu no longer expresses the heat of condensation from a square foot of radiator surface per hour, and as present day heating units have different characteristics from older forms of radiation, it is the purpose of THE GUIDE to gradually eliminate the empirical expression *square foot of equivalent direct radiation, EDR*, and to substitute a logical unit based on the Btu. The new terms to express the equivalent of 1000 Btu (Mb), and 1000 Btu per hour (Mbh), have been approved by the A.S.H.V.E.

TABLE 5. RETURN PIPE CAPACITIES

Capacity Expressed in Square Feet of Equivalent Direct Radiation

(Reference to this table will be by column letter *M* through *EE*)

This table is based on pipe size data developed through the research investigations of the AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.

PIPE SIZE INCHES	CAPACITY OF RETURN MAINS AND RISERS																											
	MAINS																								RISERS			
	1/32 Lb or 1/4 Oz Drop per 100 Ft				1/24 Lb or 2/5 Oz Drop per 100 Ft				1/16 Lb or 1 Oz Drop per 100 Ft				1/8 Lb or 2 Oz Drop per 100 Ft				1/4 Lb or 4 Oz Drop per 100 Ft				1/2 Lb or 8 Oz Drop per 100 Ft						
	Wet	Dry	Vac.		Wet	Dry	Vac.		Wet	Dry	Vac.		Wet	Dry	Vac.		Wet	Dry	Vac.		Wet	Dry	Vac.		Wet	Dry	Vac.	
M	*N*	*O*	*P*		*Q*	*R*	*S*		*T*	*U*	*V*		*W*	*X*	*Y*		*Z*	*AA*	*BB*		*CC*	*DD*	*EE*					
3/4	.....	.....	.....		.....	.....	326		.....	.....	400		.....	.....	568		.....	.....	800		.....	.....	1,130					
1	500	248	.....		580	285	570		700	320	700		1,000	412	994		1,400	460	1,400		.....	.....	1,980					
1 1/4	850	520	.....		990	595	976		1,200	670	1,200		1,700	868	1,700		2,400	962	2,400		.....	.....	3,390					
1 1/2	1,350	822	.....		1,570	943	1,550		1,900	1,060	1,900		2,700	1,360	2,700		3,800	1,510	3,800		.....	.....	5,370					
2	2,800	1,880	.....		3,240	2,140	3,260		4,000	2,300	4,000		5,600	2,960	5,680		8,000	3,300	8,000		.....	.....	11,300					
2 1/2	4,700	3,040	.....		5,300	3,470	5,450		6,700	3,800	6,700		9,400	4,900	9,510		13,400	5,450	13,400		.....	.....	18,900					
3	7,500	5,840	.....		8,500	6,250	8,710		10,700	7,000	10,700		15,000	9,000	15,200		21,400	10,000	21,400		.....	.....	30,200					
3 1/2	11,000	7,880	.....		13,200	8,800	13,000		16,000	10,000	16,000		22,000	12,900	22,700		32,000	14,300	32,000		.....	.....	45,200					
4	15,500	11,700	.....		18,300	13,400	18,000		22,000	15,000	22,000		31,000	19,300	31,200		44,000	21,500	44,000		.....	.....	62,190					
5	.....	.....	.....		.....	.....	31,500		.....	.....	38,700		.....	.....	54,900		.....	.....	77,400		.....	.....	109,000					
6	.....	.....	.....		.....	.....	50,450		.....	.....	62,000		.....	.....	88,000		.....	.....	124,000		.....	.....	175,000					
3/4	.....	190	.....		.....	190	570		.....	190	700		.....	190	994		.....	190	1,400		.....	.....	1,980					
1	.....	450	.....		.....	450	976		.....	450	1,200		.....	450	1,700		.....	450	2,400		.....	.....	3,390					
1 1/4	.....	990	.....		.....	990	1,550		.....	990	1,900		.....	990	2,700		.....	990	3,800		.....	.....	5,370					
1 1/2	.....	1,500	.....		.....	1,500	3,260		.....	1,500	4,000		.....	1,500	5,680		.....	1,500	8,000		.....	.....	11,300					
2	.....	3,000	.....		.....	3,000	5,450		.....	3,000	6,700		.....	3,000	9,510		.....	3,000	13,400		.....	.....	18,900					
2 1/2	.....	.....	.....		.....	.....	8,710		.....	.....	10,700		.....	.....	15,900		.....	.....	21,400		.....	.....	30,200					
3	.....	.....	.....		.....	.....	13,000		.....	.....	16,000		.....	.....	22,700		.....	.....	32,000		.....	.....	45,200					
3 1/2	.....	.....	.....		.....	.....	17,900		.....	.....	22,000		.....	.....	31,200		.....	.....	44,000		.....	.....	62,200					
4	.....	.....	.....		.....	.....	31,500		.....	.....	38,700		.....	.....	54,900		.....	.....	77,400		.....	.....	109,000					
5	.....	.....	.....		.....	.....	50,500		.....	.....	62,000		.....	.....	88,000		.....	.....	124,000		.....	.....	175,000					