TABLE 29-H

HOOD FACE VELOCITY (FPM) TO MAINTAIN A CONTROL VELOCITY OF 30 FPM AT RANGE

Side Ratio (W L)	*Distance X from Hood Opening to Working Area*					
	0 25W	0 5W	0 75W	W	1 25W	1 5W
1 1 Free hanging	40	120	300			
1 2 Shed type		40	77	120	170	240
1 2 Free hanging	24	60	120	215	355	
1 4 Shed type		24	40	60	90	120
1 6 Shed type		16	27	40	60	80

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sive, operating cost is high, and heating of the dining room may be a problem, since kitchen hoods sometimes exhaust many thousands of cubic feet of air per minute

Unfortunately, two practices have become traditional in kitchen hood design the bottom edge of the hood is invariably seven feet or more above floor level, which means the distance from the hood face down to the point of smoke and steam release, at the top of the range, is excessive, and end and side baffles are frowned on, in fact, free hanging hoods are common The hoods, being of the canopy type, suffer from all their troubles As has been mentioned previously, exhaust hoods cannot "reach out" more than a few inches and trap the air contaminant, and yet the kitchen hood is often four feet or more from the range surface Cross drafts can easily disperse the smoke to the room before it comes under the influence of the hood

On the *plus* side, fortunately, range hoods, in large kitchens at least, are often extremely long for their width, covering a row of ranges, ovens, grills, deep fat fryers, etc Frequently they can be set so the long side is against a wall (although the soundness of doing so is often overlooked), and the hood becomes a shed-roof type hood The bad effect of unbaffled ends is then diminished Also, the temperature gradient set up by heat of the stoves aids in creating air movement into the hood Finally, as J M DallaValle has written in "Design of Kitchen Range Hoods" (see "References"), the control velocities needed at the surface of the range are low compared with those needed, for example, in dust control where particles must be transported into the duct

DallaValle recommends 30 fpm (Table 29-H) as the control velocity to be established at the range surface For different shaped hoods, he has calculated the face velocity, that is, the velocity of air at the hood opening necessary to set up this 30 fpm control velocity His dimensions are in terms of hood width, *W* Hood shape is expressed as "side ratio" A side ratio of 1 4, for example, means a rectangular hood that is four times as long as it is wide

Two examples will show the extravagance of a freely suspended hood

Assume a freely suspended hood, 4 ft wide by 8 ft long, is located 5 ft above a range, and that a velocity of 30 fpm at the range will control the cooking vapors

Ratio of sides (4 ft by 8 ft) = 1 2

$\lambda = 5 = 1\ 25W$

According to Table 29-H, the hood face velocity should be 355 fpm Since the face is 32×355, or 11,360 cfm This figure is actually too low, according to good design standards for the hood edge should overhang the range edge (See following paragraphs)

Now assume the hood and range can be backed up against a wall, so the hood becomes a shed type The face velocity needed will be 170 fpm Since the face area is still 32 sq ft, the air volume will be 32×170, or 5440 cfm—less than half that needed for a freely suspended hood