

Are You Giving Your Workplace Clients Enough Office Space?

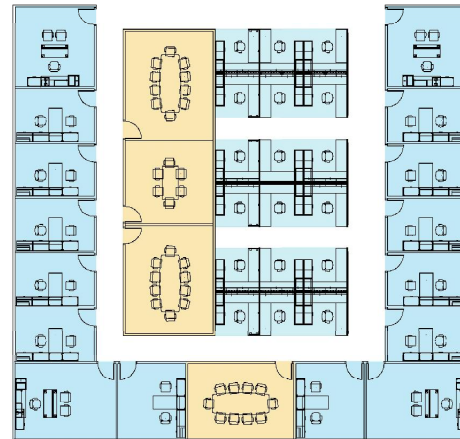
By Cheryl Duvall, FIIDA and Dudley Whitney, AICP

If not, you may be experiencing significant challenges to accommodate the space program within the floor plate, and putting your firm at risk for advising the client to purchase, build, or lease a space that is too small for their needs.

When designers and real estate brokers speak of circulation as being a percentage of a space, they refer to that portion of the entire floor plan designated for corridors and aisles within the office layout. A circulation percentage of 30% within a 10,000 SF space means that circulation occupies 3,000 SF, and the offices, workstations, meeting rooms, etc. occupy 7,000 SF of the total usable area.

Getting to that 30% when developing a space program is not obvious because we typically apply the circulation factor to a list of program elements (e.g., offices, workstations, meeting rooms, and support areas). To achieve a 30% circulation of the total floor plan, we have to multiply the program elements square feet by 42.86%, not 30%. Why? Because 30% refers to the ratio of circulation to the total usable area, but we want the ratio of the circulation to the total program elements, a very different number indeed. For 30% circulation in the example above, we want the ratio of 3,000/7,000 SF or 42.86%.

Illustrative “Legacy” Office Space with 30-Percent Circulation



Total Usable Area = 10,000 SF
 Offices, workstations, and meeting rooms = 7,000 SF (70%)
 Circulation = 3,000 SF (30%)

Incorrect

	Quantity	Unit SF	Total SF	Actual Circulation
Offices, Large	2	200	400	
Offices, Medium	6	150	900	
Offices, Small	10	100	1,000	
Workstation 1	29	48	1,392	
Workstation 2	50	36	1,800	
Meeting Room 16 ppl	1	548	548	
Meeting Room 8 ppl	2	240	480	
Meeting Room 4 ppl	4	120	480	
Subtotal Program Elements			7,000	
Circulation Factor	30.00%		2,100	23%
Total Usable Area			9,100	

Correct

	Quantity	Unit SF	Total SF	Actual Circulation
Offices, Large	2	200	400	
Offices, Medium	6	150	900	
Offices, Small	10	100	1,000	
Workstation 1	29	48	1,392	
Workstation 2	50	36	1,800	
Meeting Room 16 ppl	1	548	548	
Meeting Room 8 ppl	2	240	480	
Meeting Room 4 ppl	4	120	480	
Subtotal Program Elements			7,000	
Circulation Factor	42.86%		3,000	30%
Total Usable Area			10,000	

A designer incorrectly applying the circulation factor for 30% will underestimate the total usable area by 9 percent. The difference is even greater for larger circulation percentages. Incorrectly applying a circulation factor of 45% underestimates total usable area by 20 percent, a very significant difference that has both practical and legal ramifications.

The formula for calculating the correct circulation multiplier for any circulation percentage is shown below.

Formula for Circulation Multiplier

Formula: = (Final Circulation Percent / (100 – Final Circulation Percent))

For 45% circulation: = (45 / (100 – 45)) = 81.82% (or 0.8182)

With the correct multiplier, your client’s program will include the appropriate percentage of circulation.

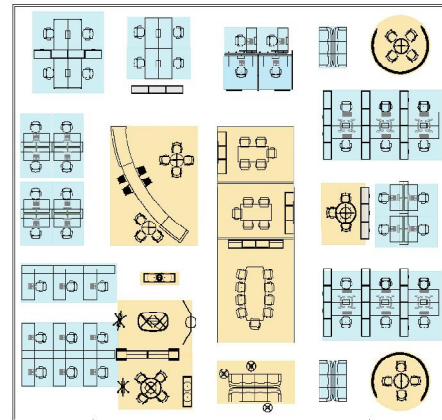
The following table lists the circulation multiplier for common circulation values.

<-----Example----->

Circulation % of Total	Circulation Multiplier	Net Square Feet	Circulation Square Feet	Total Usable Area
20%	25.00%	7,000	1,750	8,750
25%	33.33%	7,000	2,333	9,333
31%	45.03%	7,000	3,152	10,152
35%	53.85%	7,000	3,769	10,769
40%	66.67%	7,000	4,667	11,667
45%	81.82%	7,000	5,727	12,727
50%	100.00%	7,000	7,000	14,000
55%	122.22%	7,000	8,556	15,556

Multiply Net Square Feet by the Circulation Multiplier to achieve the desired circulation

Illustrative Open Plan with 45% Circulation



Total Usable Area = 10,000 SF
 Offices, workstations, and meeting rooms = 5,500 SF (55%)
 Circulation = 4,500 SF (45%)

	Incorrect			Actual
	Quantity	Unit SF	Total SF	Circulation
Offices, Large	1	200	200	
Offices, Medium	2	150	300	
Offices, Small	4	100	400	
Workstation 1	10	48	480	
Workstation 2	73	36	2,628	
Meeting Room 16 ppl	1	532	532	
Meeting Room 8 ppl	2	240	480	
Meeting Room 4 ppl	4	120	480	
Subtotal Program Elements			5,500	
Circulation Factor	45.00%		2,475	31%
Total Usable Area			7,975	

	Correct			Actual
	Quantity	Unit SF	Total SF	Circulation
Offices, Large	1	200	200	
Offices, Medium	2	150	300	
Offices, Small	4	100	400	
Workstation 1	10	48	480	
Workstation 2	73	36	2,628	
Meeting Room 16 ppl	1	532	532	
Meeting Room 8 ppl	2	240	480	
Meeting Room 4 ppl	4	120	480	
Subtotal Program Elements			5,500	
Circulation Factor	81.82%		4,500	45%
Total Usable Area			10,000	

Analysis of Circulation within Private Offices and Workstations

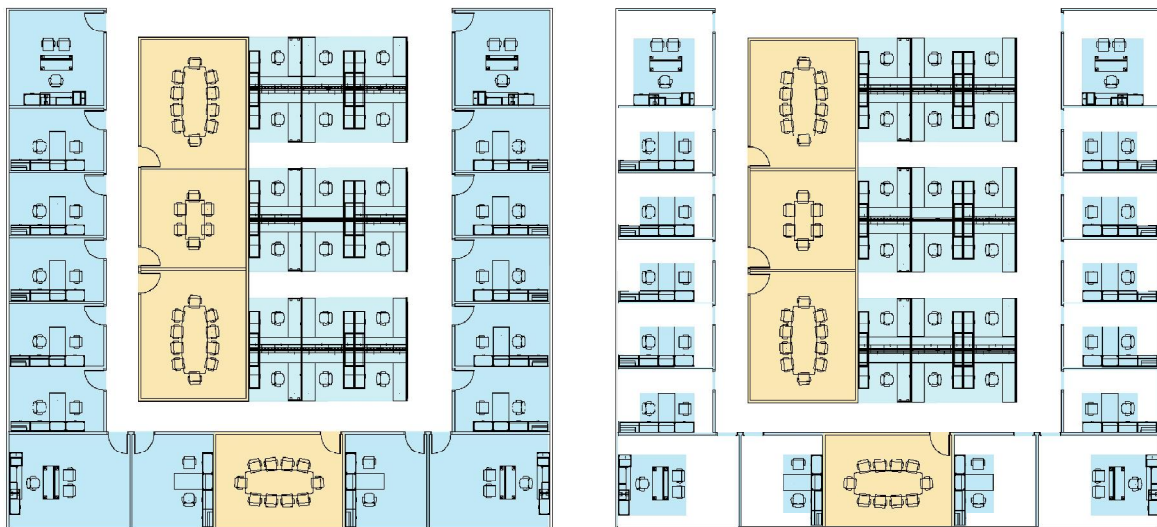
Recently we developed a program of space needs for a new customer, with several options ranging from 40 percent private offices (their existing facility) to a mere 5 percent private offices for a handful of executives. In a subsequent conversation with our customer’s real estate broker, he mentioned his own office had recently moved into an open plan environment with unassigned desks and audio privacy rooms. The space he described sounded similar to the most aggressive option we had presented to our mutual customer.

As we reviewed the list of program needs, the broker challenged our 42 percent circulation factor, proposing his 30 percent rule of thumb instead. We paused to share our in-depth research of circulation factors based upon years of measurement and study. While legacy offices typically have circulation percentages of 25-35 percent, more open offices can have circulation factors in the range of 40-45 percent and higher. This fact usually raises eyebrows, but once explained it's easily understood.

What is often overlooked is the amount of circulation space within the private offices of a legacy space that is not included in the overall circulation percentage. Between 30 to 60 percent of the space within a private office is really private circulation space dedicated to the occupant and not available to other employees. Typically, larger private offices have a larger percentage of circulation space within it. Workstations are not exempt either, which can have internal circulation as high as 34 percent depending on their configuration.

Consider a typical office layout where half of the employees are in private offices, and where the overall circulation of that floor is 30 percent. When the internal circulation within private offices is included, the overall circulation percentage of a floor balloons to over 50 percent, and as high as 55 percent if the larger workstations are included. Open plan layouts leverage that additional space, converting much of the private internal circulation to better uses and connecting opportunities for all employees.

Private circulation within private offices



The white areas within the offices on the right illustrate the amount of circulation that is enclosed within private offices and not counted in the 30% circulation total.

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