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Workloading Guide



Disclaimer/Warning

All production rates, cost figures, and other data used in this program represent our best efforts to provide data and information for illustrative purposes. Production rates and the resulting workload are subject to a multitude of variables that are unique to each user and facility. Thus, it is recommended that the user develop individual production rates.

All production rates, measurements, and calculations are the sole responsibility of the user of this guidebook. It is the user's responsibility to verify the accuracy of all information before using it.

The ISSA, the authors, and KnowledgeWorx assume no responsibility for the accuracy of your projections. The ISSA, the authors, and KnowledgeWorx make no representations as to your ability to accurately estimate staffing requirements using this product. Accordingly, they shall not be liable for any errors or omissions contained herein, nor for the results obtained.



The *Achieve Workloading Guidebook* assists organizations in meeting the requirements for CIMS certification. See page 30 for more information.

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Achieve Workloading

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Introduction

Whether you manage an in-house operation or contract for services, determining the number of labor hours needed to maintain your facility is ground zero. If you outsource, knowing the number of labor hours helps you determine whether the contractor is adequately staffed and helps you evaluate contractor proposals. If you are an in-house operation, knowing the correct staffing level at a given service level is the key to effective management.

For facility management professionals, determining the number of labor hours needed to staff a facility can be likened to a high-wire balancing act. A bid too far to the right or left of middle ground can spell disaster. Just as the high-wire performer carries a pole for balance, facility management professionals need a tool to balance profitability with competitiveness.

Many people in our industry believe that they can walk into a facility and, using years of experience, quickly determine how many hours are needed to clean the building. Another common technique -- dividing the number of square feet by a "theoretical productivity rate" -- may occasionally produce a correct number, but it is often inaccurate.

Workloading is the only reliable method of determining how many service hours are needed for your building. Workloading answers the question, "How long should it take to clean my building?" By systematically applying time standards to each task and area within a facility, workloading embodies the cliché, "time is money." It is the realization that every task takes time, and it "dollarizes" that time.

Achieve Workloading Overview

This book provides a useable framework to simplify the workloading process and assist you in determining whether you have the “right” staffing level.

Many people in our industry believe that they can walk into a facility and, using their experience, quickly determine how many hours or employees are needed to clean the building. This guesswork is not a reliable or an accurate method for developing a staffing plan. Neither is relying on the way you’ve always staffed the building. Even if you do produce estimates that appear correct, your figures cannot be relied on or defended because they are not data driven.

Before you do anything, you will need to forget about everything. Forget about your head count, labor hours, and the scope of work. The starting point for a “zero-based” plan is a blank sheet of paper. Your numbers may have relevance later, but right now you need to start with a clean slate.

Compiling information about your facility can be very confusing, so your job will be far easier if you are organized. The key is to break your building into areas that are cleaned the same way. Your area list will be unique to your building. Some of the most common area types are general offices, executive offices, classrooms, patient rooms, break rooms, cafeterias, restrooms, lobbies, entrances, stairwells, elevators, and labs.

Workloading is a four-step process:

1. *Measure the Building*

You need to determine the amount of cleanable space that each area comprises. Note that you need to know the amount of cleanable, as opposed to gross, square feet. The process of measuring your building is referred to as conducting a space inventory.

2. *Develop a Scope of Work*

Your business is all about service. Assuming effective management, the service level that you deliver or receive is almost entirely a function of labor hours. Labor hours are dictated by the scope of work. You deliver a service, and the scope of work defines that service.

3. *Apply Production Rates*

Once you have a scope of work, you need to determine how long it will take to complete the work. You will apply production rates to each area in order to determine how many labor hours are needed to clean that area. Your goal is to generate predictable and reproducible times needed to complete the necessary tasks at an acceptable quality level.

4. *Complete a Labor Cost Analysis*

Having determined the number of labor hours needed, the next step is to calculate your labor cost. Then you will add a labor burden to the labor cost, and the final result will be your burdened labor cost.

Measuring Your Building

Conducting a space inventory to determine the number of cleanable square feet is the foundation for all of your staffing and costing efforts. Remember that you will be applying production rates to the entire area that will be cleaned, so accurate calculation of the building's net cleanable area is essential.

The first challenge that you will face is to clearly define what you will be measuring. Although there are industry-specific definitions, too few cleaning professionals are familiar with them. Some calculate gross square footage while others focus on net or cleanable square feet. Commercial offices tend to focus on "rentable" or "usable" square footage. The bottom line is that the calculation of cleanable square footage can vary widely, so you need to have a precise definition of what is "cleanable."

Gross Square Feet versus Cleanable Square Feet

Gross Square Feet (Gross Area)

Gross square feet refers to the total "constructed area" of a building. It is obtained by measuring the outside surface of the exterior walls. It excludes atrium openings in floor plans. Gross Area should not be confused with Cleanable Area.

Cleanable Area (Net Cleanable Area)

Cleanable Area is defined as the area that is cleaned by the custodial staff. It typically includes the surface areas of floors, restrooms, carpets, lobbies, and other areas in the facility that require cleaning in order to maintain sanitary conditions and a defined appearance level. The net cleanable area excludes areas such as elevator shafts, mechanical rooms, and storage rooms that are not cleanable. It is important to note that it does not necessarily bear a relationship to other measures of floor area such as "usable area," "total interior area," or "rentable area." Accurately determining the number of cleanable square feet that will be serviced is the foundation for your workloading and staffing calculations.

Estimating Cleanable Area

FMLink Group, LLC recommends the following formula if you are unable to determine the cleanable area:

Cleanable Square Feet = Gross Square Feet minus walls (1.5% of gross square feet) minus non-cleanable areas (i.e., electrical closets, mechanical rooms, storage rooms) (FMLink Group, LLC, 2008).

Industry Measurement Standards

There are a number of industry-specific measurement standards that are used to measure space in a building.

- The Building Owners and Managers Association International (BOMA) supports Standard Method for Measuring Floor Area in Office Buildings (ANSI/BOMA Z65.1), which is widely used for measuring leased office space in the United States outside the metropolitan areas of New York and Washington, D.C.
- The International Facility Management Association (IFMA) endorses the Standard Classification for Building Area Measurement (ASTM E 1836-01), which is used for floor area measurements in facility management, occupant requirements, space planning, and strategic facility planning.

- The Real Estate Board of New York's (REBNY) Standard is used to measure leased office space in the New York metropolitan area, including nearby parts of Connecticut and New Jersey.
- The Greater Washington Commercial Association of Realtors (GWCAR) Standard is used to measure leased office space in the Washington, D.C., metropolitan area, including nearby parts of Maryland and Virginia.
- BOMA Industrial Standard (ANSI/BOMA Z65.2) was released in October of 2004 by BOMA and the Society of Industrial and Office Realtors (SOIR) for measurement of industrial and warehouse properties.

Note that IFMA and BOMA recently published "A Unified Approach to Measuring Office Space." The report outlines common definitions for floor area measurements along with major revisions to IFMA and BOMA's respective area measurement standards. A working group has been appointed to develop common definitions. Ultimately, the common definitions will be incorporated into the standards that each organization supports.

How to Measure

The first step is to choose the right tool. You can physically measure, use to-scale drawings, or use CAD drawings to measure and categorize each area. The tool or combination of tools that you choose will be a function of the area that needs to be measured and the resources that are available. In many cases, a combination of tools works best. The larger the building, the more advantageous it is to use either blueprints or computer-aided design. Whichever method you choose, your objective is to determine the amount of space that needs to be cleaned and the type of floor surface for each classification (e.g., 15,000 square feet of carpeted general office space).

1. Physical Measurement

Physically measuring a building is the most tedious and labor-intensive data collection technique. However, in many cases, accurate blueprints or computer-aided design drawings either are not current or are unavailable. Measuring wheels and lasers are relatively inexpensive and widely available. Both are easy to operate and can save a great deal of time. They also help ensure more consistent data collection.

Measuring Wheels

Measuring wheels are useful for areas that are 40 feet or more in length. They are available with built-in calculators.

Lasers/Ultrasonic Distance Meters

Laser and/or ultrasonic distance meters work well in a variety of applications. There is a wide range of models with entry-level devices (under \$50) that are capable of measuring most rooms under 500 square feet. More expensive models tend to have greater ranges.

2. Blueprints

Blueprints or scale drawings are often readily attainable. However, they frequently do not indicate surface type, so you may need to survey the site to identify the floor coverings. You should also verify that the drawings are current and accurately depict

the areas to be cleaned by spot checking a few areas. Once you have confirmed that the drawings are drawn to scale and current, you can begin the “take-off” process.

Manual Take-Off

Using a ruler with 1/16” markings and a calculator, you will measure each room and record the measurements on a data collection form similar to the one in Appendix A.

Digital Take-Off

Digital take-off tools are ingenious portable systems devices that rapidly and accurately determine area from drawings of any scale and in common units of measure. Many devices are available with a computer interface that enables the information to be instantly transferred into a spreadsheet or your estimating program.

Two of the most commonly used digital take-off tools are the Scale Master II (Calculated Industries, Inc.) and the PlanWheel XLU2 (Scalex Corporation).

3. *Computer-Aided Design (CAD)*

According to Wikipedia (Wikipedia contributors, 2008):

Computer-aided design (CAD) is the use of computer technology to aid in the design and especially the drafting (technical drawing and engineering drawing) of a part or product, including entire buildings.

CAD drawings are increasingly available. Keep in mind that there are a multitude of CAD programs and many of the file formats require that you own a copy of the program in order to open the file. In many cases, you can obtain a limited function viewer that enables you to open a file and perform basic tasks such as take-offs.

Using a Worksheet

Regardless of how you obtain the building’s measurements, you will need to record the information. A sample Data Collection Form is included in Appendix A and partially shown in Figure 1.

Figure 1: Data Collection Form

	A	B	C	D	E	F	G
1	Area Type	Description	Floor Surface	L	W	Sq. Ft.	Notes
2							
3							
4							
5							
6							
7							
8							
9							

Let’s look at the information that you will collect on the form. Be sure to use consistent descriptions so that it is easy to subtotal your data.

Area Types

The key to effective workloading is to break your building into areas that are cleaned the same way. While your area list will be unique to your building, some of the most common area types are general offices, executive offices, classrooms, patient rooms, break rooms, cafeterias, restrooms, lobbies, corridors, entrances, stairwells, elevators, and labs.

Description

Enter a brief description of the area to help you identify it. Using a room number or commonly recognized description is very useful (e.g., office 101 or 3rd floor men’s restroom).

Floor Type

Floor care programs comprise a significant portion of the cleaning labor hours and thus have a major impact on the cost and quality of service. Record each area’s floor surface. If you are using a floor plan, it is very helpful to color code the areas by floor type.

Length/Width

Enter the length and width of the area.

Total Square Feet

Enter the total square feet for the area. Total square feet for an area is equal to its length times width. If an area is irregularly shaped, you will need to break it into smaller, easily measured pieces and then total the parts. Take care to avoid double counting.

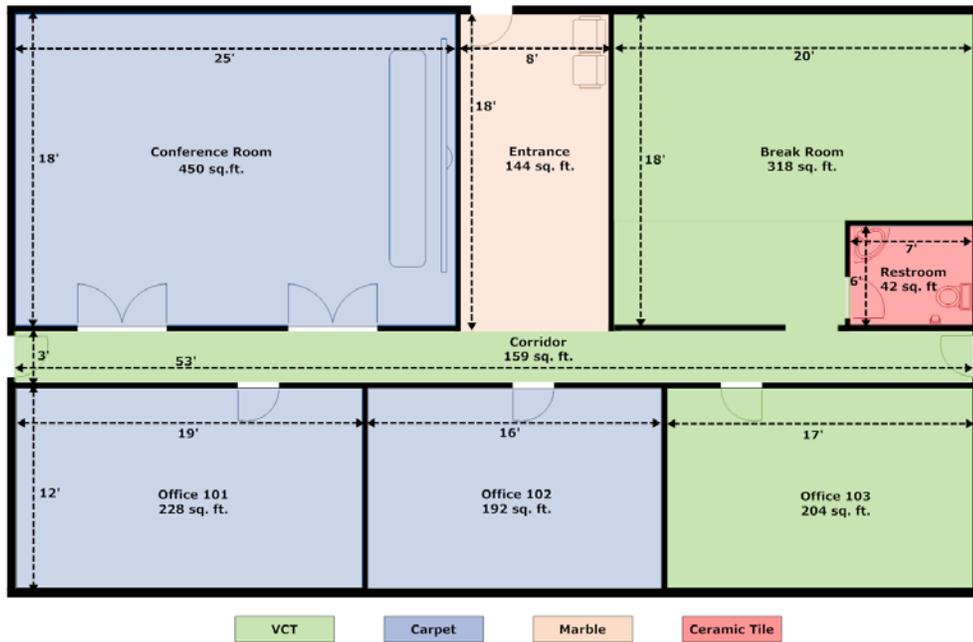
Notes

Use this section to note any unique characteristics that will impact the time that it will take to clean the area. Some of the most common variables include customer expectations, soil load, density, limited access, and special surfaces.

Example Building Take-Off

Figure 1 is an example floor plan. The dimension of each area is indicated, and the various floor surfaces have been color coded.

Figure 2: Example Floor Plan-Summit Office Building



A completed Data Collection Form (from Appendix A) would like this:

Area Type	Description	Floor Surface	L	W	Sq. Ft.	Notes
Office	Office 101	Carpet	19	12	228	Executive office
Break Room	Employee Area	VCT	20	18	318	High use
Entrance	Entrance	Marble	18	8	144	Impression area
Conference Room	Main conference room	Carpet	25	18	450	Low use
Corridor	Corridor	VCT	53	3	159	
Office	Office 102	Carpet	16	12	192	
Office	Office 103	VCT	17	12	204	
Restroom	Unisex	Ceramic	7	6	42	

Note that the Break Room is 20’ long and 18’ wide (360 sq. ft.). However, the Restroom is 42 sq. ft. and must be deducted since it occupies a corner of the Break Room, leaving the Break Room with net cleanable area of 318 sq. ft.

Note the use of consistent descriptions for the Area Types and Floor Surfaces. This will become quite important as you begin to work with the data.

Entering the data into a spreadsheet or workloading program is the next step and will allow you to determine the size of each area and floor surface within each area by:

1. Sorting the building data, and
2. Subtotaling

Sorting the Data

Sorting the data is a two-step process. First, sort by Area Type. Next, sort by Floor Surface. The sorted data is shown in Figure 3.

Figure 3: Sorted Building Data

	A	B	C	D	E	F	G
1	Area Type	Description	Floor Surface	L	W	Sq. Ft.	Notes
2	Break Room	Employee Area	VCT	20	18	318	High Use
3	Conference Room	Main Conference Room	Carpet	25	18	450	Low Use
4	Corridor		VCT	53	3	159	
5	Entrance		Marble	18	8	144	Impression Area
6	Office	Office 101	Carpet	19	12	228	Executive Office
7	Office	Office 102	Carpet	16	12	192	
8	Office	Office 103	VCT	17	12	204	
9	Restroom	Unisex	Ceramic Tile	7	6	42	
10							

Note that all similar Area Types are grouped together and Floor Surfaces are grouped within each Area Type. Now you are ready to subtotal the data.

Subtotaling the Data

First, subtotal by Area Type. Next, subtotal by Floor Surface. The results are shown in Figure 4.

Subtotaling enables you to easily determine each Area Type’s total square feet and the number of square feet of each Floor Surface within the area.

Figure 4: Subtotaled Building Data

	A	B	C	D	E	F	G
1	Area Type	Description	Floor Surface	L	W	Sq. Ft.	Notes
2	Break Room	Employee Area	VCT	20	18	318	High Use
3			VCT Total			318	
4	Break Room Total					318	
5	Conference Room	Main Conference Room	Carpet	25	18	450	Low Use
6			Carpet Total			450	
7	Conference Room Total					450	
8	Corridor		VCT	53	3	159	
9			VCT Total			159	
10	Corridor Total					159	
11	Entrance		Marble	18	8	144	Impression Area
12			Marble Total			144	
13	Entrance Total					144	
14	Office	Office 101	Carpet	19	12	228	Executive Office
15	Office	Office 102	Carpet	16	12	192	
16			Carpet Total			420	
17	Office	Office 103	VCT	17	12	204	
18			VCT Total			204	
19	Office Total					624	
20	Restroom	Unisex	Ceramic Tile	7	6	42	
21			Ceramic Tile Total			42	
22	Restroom Total					42	
23	Grand Total					1737	
24							

You now know that the building has 1,737 cleanable square feet. Note that the offices comprise 624 sq. ft., of which 420 sq. ft. are carpeted and 204 are VCT. This will be important later because the service requirements for carpeting and VCT are different. Table 1 summarizes the data by Area Type.

Table 1: Building Summary by Area Type

Area Type	Sq. Ft.
Break Room Total	318
Conference Room Total	450
Corridor Total	159
Entrance Total	144
Offices-Carpeted Total	420
Offices-VCT Total	204
Restroom Total	42
Building Total	1,737

Having measured the building, you can now begin to develop a scope of work.

Scope of Work

What Is a Scope of Work?

A scope of work is a statement outlining the specific services a facility service provider or building service contractor is expected to perform, generally indicating the type, level, and quality of service, as well as a schedule for completion. It is analogous to a set of specifications.

More specifically, a scope of work is a list of tasks that need to be completed and the frequency at which the tasks will be delivered.



What Is Important When Writing a Scope?

Remember that the scope of work that you prepare will become the basis for a service agreement. When drafting a scope:

- Use industry-specific terminology: Whether you are preparing a request for proposal (RFP) or developing a scope for a prospective customer, the use of industry-specific terminology facilitates clear communication.
- Provide accurate information: The scope of work forms the basis for determining how many labor hours will be needed and ultimately drives price. If the scope of work contains inaccuracies, then the price will likewise be inaccurate.
- Provide enough information for detailed responses: The more information that you provide, the stronger the scope will be. When a scope lacks important information, those responding will tend to protect their interests by adding contingency factors (usually more labor).
- Be realistic: The scope should strike an appropriate balance between cost and service. Avoid the temptation to create a “wish list.” Remember that every task adds costs. As the task list gets longer, the labor requirements increase and the cost escalates.

Scope Development

Developing a scope of work is a three-step process:

1. Divide the building into areas
2. Assign tasks to each area
3. Establish task frequencies

The easiest way to manage the process is to work on one area at a time. Focusing on a single area helps you stay organized and reduces complexity in larger buildings.

1. *Divide the building into areas*

If you measured the building using the procedure set forth above, you should already have your building divided into areas that are cleaned the same way. The data from the Summit Office Building measuring example is presented again in Table 2.

Table 2: Building Summary by Area Type

Area Type	Sq. Ft.
Break Room Total	318
Conference Room Total	450
Corridor Total	159
Entrance Total	144
Offices-Carpeted Total	420
Offices-VCT Total	204
Restroom Total	42
Building Total	1,737

2. *Assign tasks to each area*

For each area identified in Table 2, you will assign tasks that need to be performed. The list should include enough tasks to maintain the area in a manner consistent with your expectations. A sample office area task list is shown in Table 3.

Table 3: Office Area Task List

Office Areas-Carpeted 420 Sq. Ft.
Remove all trash and replace soiled can liners
Vacuum carpeting using backpack vacuum with 14" tool
Dust all horizontal surfaces below 60" with duster
Remove spots on carpets
Spot wash walls, light switches, doors, etc.
Shampoo by extraction method all carpeting

3. *Establish task frequencies*

Every task will have a frequency assigned to it. Be specific. Avoid the temptation to use “as needed,” “as required,” or other ambiguous phrases because they do not represent a meaningful frequency. Task frequencies will be higher in higher traffic areas. Likewise, frequencies tend to increase along with customer expectations. If budgets are tight, frequencies can be decreased.

Task frequencies should be expressed numerically as the number of services per year. For example, a task that is performed one time per week has an annual frequency of 52 (1 time per week multiplied by 52 weeks per year equals 52 services per year). Table 4 lists the most common task frequencies.

Table 4: Common Task Frequencies

Task Frequency	Services per Year
Seven Day Service	364
Five Day Service	260
Three Times per Week	156
Two Times per Week	104
Weekly	52
Bi-Weekly	26
Monthly	12
Quarterly	4
Yearly	1

Office area task lists with task frequencies assigned (scope of work) are shown in Tables 5 and 6. Note that even though the scopes are both for office areas, they are slightly different because some of the offices are carpeted and some have VCT.

Table 5: Scope of Work Office Areas-Carpeted

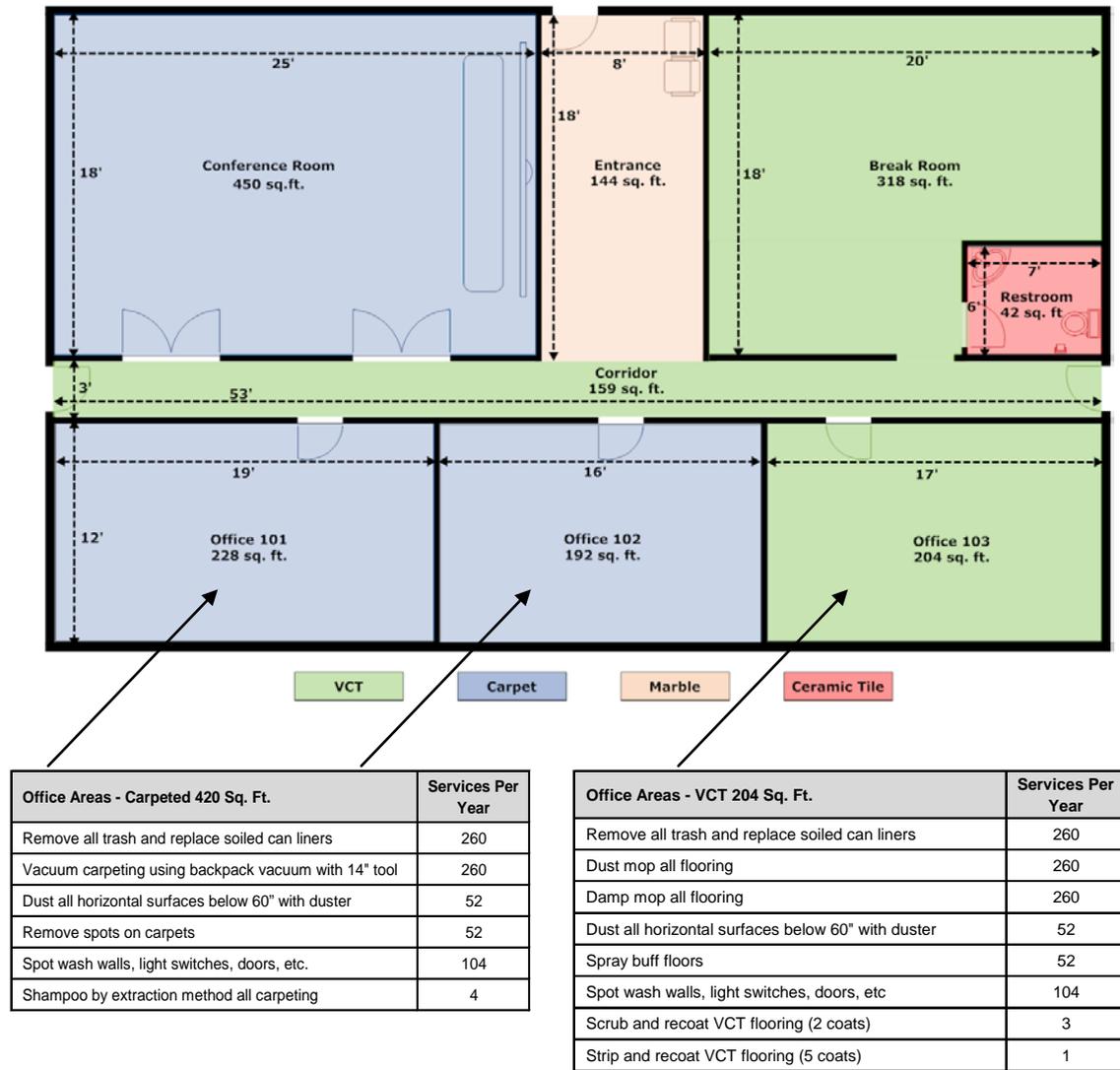
Office Areas - Carpeted 420 Sq. Ft.	Services Per Year
Remove all trash and replace soiled can liners	260
Vacuum carpeting using backpack vacuum with 14" tool	260
Dust all horizontal surfaces below 60" with duster	52
Remove spots on carpets	52
Spot wash walls, light switches, doors, etc.	104
Shampoo by extraction method all carpeting	4

Table 6: Scope of Work Office Areas-VCT

Office Areas - VCT 204 Sq. Ft.	Services Per Year
Remove all trash and replace soiled can liners	260
Dust mop all flooring	260
Damp mop all flooring	260
Dust all horizontal surfaces below 60" with duster	52
Spray buff floors	52
Spot wash walls, light switches, doors, etc	104
Scrub and recoat VCT flooring (2 coats)	3
Strip and recoat VCT flooring (5 coats)	1

Figure 5 is a graphical representation of the scope of work and its relation to the floor plan.

Figure 5: Floor Plan with Scope of Work



Value of Frequencies in the Budgeting Process

If your organization is constantly under pressure to do more with less, you must be prepared to justify staffing needs. Your cleaning business or department is only as good as your work force, and cleaning managers are only as good as their task management skills. It is essential to have accurate answers to the following questions: How long does it take to complete a task or clean an area? How does changing the task frequencies affect cost and cleaning results? What happens to the bottom line when adding or subtracting square footage? What would a change in wages do to the overall budget? What is the best cleaning plan?

The process of workloading a facility, building, or cleaning job helps establish a scope of work, staffing level and an accurate estimate of the cost to perform the work.

Workloading also can help identify productivity strengths and weaknesses and help support or justify a bid for building service contractors (BSCs). Understanding the fundamentals of workloading and using the right tools will help you identify improvement opportunities and get the most out of your work force.

There are many ways cleaning managers can use the data collected during the workloading process. With square footage, cleaning times, and tasks calculated, managers can note areas where their facilities or cleaning jobs might be overstaffed or understaffed. If necessary, they can shuffle staff to increase performance and reduce labor hours. Even if managers find they already have a pretty accurate number of workers in each area, the workloading process helps validate staffing levels, especially when they are under scrutiny.

Workload reports, in addition to building data, are excellent tools in the boardroom for justifying a budget request or backing up the need for an additional full-time employee. This data also is great for explaining to workers why one employee might be cleaning twice as much area as another employee. It may even keep an employee from walking out the door.

Again, your cleaning business or department is only as good as your work force, and cleaning managers are only as good as their task management skills. By putting proper workloading to use, you can be a great cleaning manager, get the most out of your work force, and improve your cleaning business or department.

Production Rates

What Is a Production Rate?

A production rate is a measure of productivity. It is the amount of time required to satisfactorily complete a specific task or group of tasks over a given area under average conditions.

Types of Production Rates

The cleaning industry uses various types of production rates.

1. *Per Item*

This rate lists a time for each specific item to be cleaned. The total cleaning time is then calculated by multiplying the number of items to be cleaned by the time per item. For example, it takes one minute to clean and disinfect a desk telephone. The building has 60 phones. Thus, it will take 60 minutes to clean the phones. Item-based production rates are of limited utility because they require counting all desks, trash receptacles, phones and other items that need to be cleaned. In addition to being a large undertaking, this method is extremely cumbersome to administer because item counts in a building change frequently.

2. *Task-based*

Task-based production rates measure the time that it takes to complete a specific task over a defined area. In most cases these rates are expressed as the number of square feet that can be cleaned in one hour performing a single task. For example, trash could be pulled at a rate of 15,000 square feet per hour under normal conditions. At that rate it should take two hours to pull the trash from a 30,000 square feet area.

3. *Unit Groups*

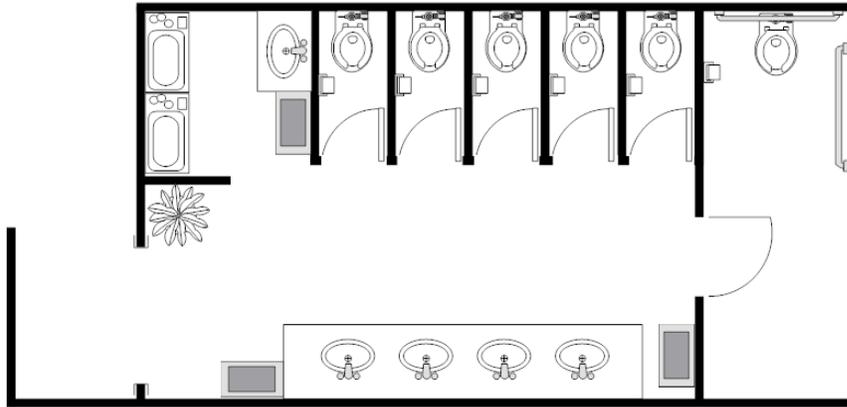
In certain instances, production rates are stated in time-per-unit. The cleaning time is calculated by applying a time factor to each unit type (i.e., three minutes per fixture). That number multiplied by the total number of units equals the total cleaning time for the entire area.

This method works particularly well when the time standard is more closely tied to the number of units than to the number of square feet in an area. While there are many unit-based production rates, this method is most widely used to determine restroom cleaning times.

For example, the restroom depicted in Figure 6 contains 13 fixtures (7 sinks + 6 toilets). Each toilet, urinal, or sink is considered one fixture. Shower stalls are counted as two fixtures. Assuming three minutes per fixture,¹ it should take 39 minutes (13 fixtures times three minutes per fixture) to clean the restroom.

¹ The time to clean a fixture includes performing the following tasks: remove trash, clean fixtures, wipe mirrors, re-stock supplies, clean partitions, dust mop floor, and damp mop floor.

Figure 6: Restroom Floor Plan



4. *Per Worker Hour*

A per worker hour or hourly production rate uses the average number of square feet that a worker can clean in one hour. For example, a worker cleaning Class A might perform that work at 4,000 square feet per hour. Assuming 7 productive hours (eight-hour shift less one hour for lunch and breaks), that individual would be able to clean 28,000 square feet per shift.

Production Rate Type Comparison

Table 7 highlights the differences between various types of production rates.

Table 7: Production Rate Type Comparison

Per Item	1 minute per trash receptacle
Task Based	Remove trash at 15,000 sq. ft. per hour
Unit Groups	3 minutes per fixture
Per Worker Hour	4,000 sq. ft. per worker hour

Building Variables

Think about your facility. How many people does it take to clean the office space? The lobby? The restrooms? No, this isn't a light bulb joke, although there are just as many answers. The answer is: It depends. It depends on a host of your building's unique characteristics such as:

- Cleaning Frequencies
- Customer Expectations
- Cleaning System
- Facility Type
- Building Age
- Facility Size
- Density
- Architectural Design
- Building Surfaces
- Quality Levels
- Organizational Culture
- Labor Market
- Quality of Supervision
- Budget Constraints
- Type of Equipment Used
- Geographic Location
- Labor Market Demographics
- Weather

While an infinite number of variables can impact production rates, the variables listed above are the most common. The interaction of variables can have a substantial impact on the production rates within a building.

Building Classes

The Building Owners and Managers Association (BOMA) provides a very useful working definition of office space classifications (Building Owners and Managers Association International, 2008):

For the purposes of comparison, office space is grouped into three classes in accordance with one of two alternative bases: metropolitan and international. These classes represent a subjective quality rating of buildings which indicates the competitive ability of each building to attract similar types of tenants. A combination of factors including rent, building finishes, system standards and efficiency, building amenities, location/accessibility and market perception are used as relative measures. The metropolitan base is for use within an office space market and the international base is for use primarily by investors among many metropolitan markets.

Building amenities include services that are helpful to either office workers or office tenants and whose presence is a convenience within a building or building complex. Examples include food facilities, copying services, express mail collection, physical fitness centers, or child care centers. As a rule, amenities are those services provided within a building. The term also includes such issues as the quality of materials used, hardware and finishes, architectural design and detailing and elevator system performance. Services that are available readily to all buildings in a market, such as access to a subway system or proximity to a park or shopping center, are usually reflected in the quality of the office market and therefore all buildings are affected. The class of a specific building may be affected by proximity only to the degree that proximity distinguishes the building (favorably or unfavorably) from other buildings in the market.

The purpose of the rating system is to encourage standardization of discussion concerning office markets, including individual buildings and to encourage the reporting of office market conditions that differentiate among the classes. Nevertheless, BOMA International does not recommend the publishing of a classification rating for individual properties.

Metropolitan Base Definitions

Class A

Most prestigious buildings competing for premier office users with rents above average for the area. Buildings have high quality standard finishes, state of the art systems, exceptional accessibility, and a definite market presence.

Class B

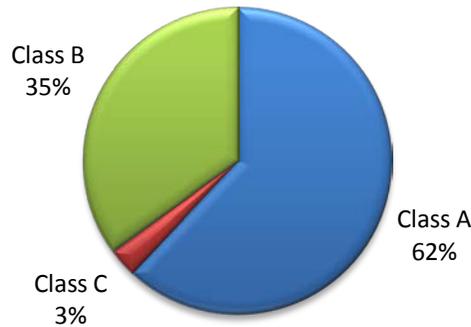
Buildings competing for a wide range of users with rents in the average range for the area. Building finishes are fair to good for the area and systems are adequate, but the building does not compete with Class A at the same price.

Class C

Buildings competing for tenants requiring functional space at rents below the average for the area.

BOMA estimates that building classes are distributed as shown in Figure 5 (Building Owners and Managers Association International, 1997):

Figure 7: Building Class Distribution



Sources of Production Rates

There are several sources of production rates. The most widely available are published by industry associations.

ISSA

ISSA’s 447 Cleaning Times (ISSA, 2003) is a widely used source of cleaning industry production rates. *ISSA’s 447 Cleaning Times* is in its fourth edition and is available in three languages.

APPA

In the educational sector, some have found *APPA’s Custodial Staffing Guidelines* to be helpful.

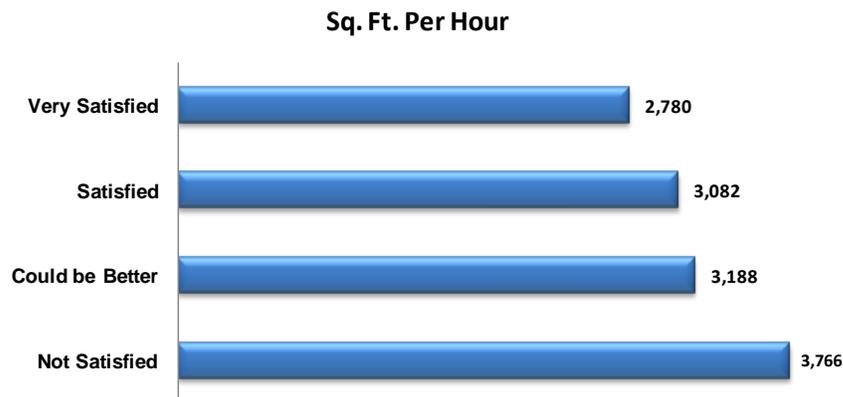
BSCAI

The Building Service Contractors’ Association International publishes *BSCAI’s Production Rate Recommendations*.

BOMA

Cleaning Makes Cents (Building Owners and Managers Association International, 1997) contains a vast amount of useful cost and production rate data. Figure 8 illustrates the impact that increased production has on client satisfaction (Building Owners and Managers Association International, 1997). As production rates increase, client satisfaction declines.

Figure 8: Impact of Productivity on Quality



In addition to published production rates, numerous industry consultants can provide production rates. Whether you choose an industry association’s rate or work with a consultant, the production rates that you obtain are merely a starting point. Keep in mind that published production rates lag market production rates and do not usually reflect the marketplace realities. In order to be competitive, you need to understand your production rates and ensure that they are accurate.

Small differences in production rates dramatically impact the number of hours needed. Table 8 demonstrates the impact that losing only 15 minutes per day can have on the bottom line. If a staff of 25 workers earning \$10.00 per hour each lose 15 minutes a day, the lost productivity is \$16,250 per year.

**Table 8: Cost of 15 Minutes Lost per Worker Each Day
Lost Wages Only (Excludes Payroll Taxes and Insurance)**

Hourly Labor Rate	Number of Workers		
	10	25	100
\$ 8.00	\$ 5,200	\$13,000	\$ 52,000
\$ 10.00	\$ 6,500	\$16,250	\$ 65,000
\$ 12.00	\$ 7,800	\$19,500	\$ 78,000

Because accurate production rates are essential, the best practice is to develop your own building-specific production rates. Conducting your own time studies is one of the best methods to determine the production rate for a given task.

How to Perform a Time Study

1. *Choose a Task*
Select a task to study. Focus on the tasks that comprise a high percentage of your labor hours and are included in most buildings. Restroom cleaning, dusting, trash removal, and vacuuming are tasks that are performed at high frequencies in most buildings.
2. *Measure the Area*
Verify the size of the area that the task will be performed in.
3. *Note Building Variables*
Determine any variables that will impact production rates. If variables exist, note that fact so that you can make adjustments later.
4. *Observe and Record*
Watch several people as they perform the task. It is very important that the workers be unaware that you are observing. Record the time that it takes each cleaner to complete the task. It is generally easier to record the time in minutes and then convert to hours later in the process.
5. *Average the Rates*
Determine the average production rate.
6. *Adjust for Variables*
Make adjustments for any variables.

7. *Fine-tune Your Rates*

Now that you know your actual production rate, you can begin to manage productivity. For instance, you might choose to assess the impact that different pieces of equipment will have on productivity (e.g., backpack vacuum vs. upright vacuum).

Time Study Example

In this example we will evaluate the production rate to remove trash from a 15,000 square foot office area that is of normal density and for which there are no other variables.

Task: Remove trash

Study Area: 15,000 square feet

Density: Normal. No variables.

Time study results:

Cleaner	Time to Complete
Cleaner 1	33 Minutes
Cleaner 2	27 Minutes
Cleaner 3	30 Minutes
Cleaner 4	30 Minutes
Cleaner 5	32 Minutes
Cleaner 6	28 Minutes
Total Time	180 Minutes
Average Time	$180/6 = 30$ Minutes

Use the following formula to determine your production rate:

$60 \div (\text{average minutes from time study}) \times (\text{number of square feet in the study})$

In this study the formula would be:

$60 \div 30 \times 15,000 = 30,000$ square feet per hour

Since there were no variables, you now know that the base production for trash removal in this building is 30,000 square feet per hour.

Applying Production Rates (Workloading)

The value of developing production rates is in applying them to answer specific staffing questions. Based on the scope of work, you will need to determine how long it will take to complete the work. By applying production rates to each area, you can determine how many labor hours are needed to clean that area. Your goal is to generate predictable and reproducible times needed to complete the necessary tasks at an acceptable quality level. You will repeat this process for each area.

Overview of How to Calculate Annual Hours

In this step you will determine how many labor hours are needed to clean each area by applying your production rates to the scope of work. You will be assigning a cleaning time or production rate to each task.

Table 9 contains a scope of work for a 15,000 square foot office area. The first task listed is vacuuming all carpeted floors. The scope calls for the carpet to be vacuumed 260 times a year (5 days per week). We also know that our vacuuming production rate is 10,000 square feet per hour.

Table 9: Carpet Office Example (15,000 sq. ft.)

Office Areas-Carpet	Cleaning Frequency	Cleanable Area or Units	Productivity Rate	Task Time (Area sq.ft./Rate)	Annual Time in Hours Task Time * Frequency
Vacuum carpeting using backpack vacuum with 14" tool	260	15,000	10,000	1.5	390.0
Remove all trash and replace soiled can liners	260	15,000	30,000	0.5	130
Dust all horizontal surfaces below 60" with duster	52	15,000	10,000	1.5	78
Remove spots on carpets	52	15,000	30,000	0.5	26
Spot wash walls, light switches, doors, etc.	104	15,000	15,000	1	104
Shampoo by extraction method all carpeting	4	15,000	2,000	7.5	30
Total Hours per Year					758

The first step is to divide the cleanable area's square feet by the task production rate (15,000 square feet /10,000 square feet per hour). Doing so yields a task time of 1.5 hours.

Next, calculate the annual time in hours by multiplying the task time by the annual task frequency (1.5 hours x 260) to get 390 hours per year.

Repeat this process for each task and each area of the building. The workloading example in Appendix C presents a complete workload of a hypothetical office building.

Translating Annual Hours into Staff Positions

When determining the number of staffing positions, it is useful to think in terms of full-time equivalent (FTE) positions. Full-time equivalent (FTE) is the percentage of time that an employee works represented as a decimal. A full-time person is 1.00, a half-time person is .50, and a quarter-time person is .25.

It is important to understand that the definition of "full-time" must be determined before calculating the number of full-time equivalents.

Full-time Positions

A full-time position is equal to the number of total hours worked per week that an organization considers full-time multiplied by the number of work weeks in a year (normally 52). For example, an organization that considers 40 hours per week to be full-time would define a full-time position as 2,080 hours in a year (52 weeks times 40 hours per week). The actual definition of hours that your organization considers "full-time" may vary.

Full-time Equivalent (FTE)

The formula to determine a full-time equivalent is the number of total hours worked divided by the number of hours the organization considers full-time. For example, a person that works 20 hours per week is equal to .5 FTE (20 hours per week worked divided by 40 hours for full-time).

When moving from hours to staffing positions, keep in mind that a full-time equivalent ordinarily works:

- 2,080 hours per year (52 weeks times 40 hours per week)
- 173.33 hours per month (2,080 divided by 12)
- 4.33 weeks per month (12 months divided by 52 weeks)

Table 9 shows that given the scope of work, 758 hours per year are needed to staff these office areas. To determine how many FTE are required, we will assume that the organization defines full-time as 40 hours per week; therefore, this position represents .36 FTE (758 hours required for service divided by 2,080 per year for a full-time position).

Non-Cleaning Tasks

Some cleaning staffs are responsible for non-cleaning tasks such as opening or closing a building, delivering mail, special event setups or cleanups, and emergency repairs. These tasks should be included in your workload analysis because they require labor hours. Omitting them will result in fewer staff than the work requires.

Let's consider this example. A school has 1 head custodian and 2 custodians. The workload analysis was based on cleaning tasks alone and recommends 3 FTE's. However, the head custodian has 4 hours of non-cleaning tasks during the day (.5 FTE). Since we limited our workloading to only the cleaning tasks, we will be short the .5 FTE needed for non-cleaning tasks.

Non-cleaning tasks can either be set up as a separate area or included as individual tasks within areas. The most accurate method for establishing production rates is to conduct a time study. Whichever approach you choose, it is important to include these tasks since they consume labor hours.

Vacations, Holidays, Sick Time and Paid Time Off

Paid time off can seriously impact a staff's ability to deliver the scope of work. For example, suppose a department has a stable workforce, little turnover, and a staff that is a member of a collective bargaining unit. One consequence of the staff's longevity is that the workforce may have accumulated substantial paid time off. A summary of the staff's actual time off taken over the course of the past eighteen months is shown in Table 10.

Table 10: Time Off per Month Example

Employee	Total Hours per Month
Employee 1	10.1
Employee 2	27.3
Employee 3	14.3
Employee 4	13.1
Employee 5	21.8
Total Time Off per Month in Hours	86.6
Total Time Off per Week in Hours (86.6/4.33)	20.0

A full-time position is 173.33 hours per month (40 scheduled hours per week x 4.33 weeks per month). Table 10 shows that the time off totals 86.6 hours each month. Each hour taken is an hour that is not available for productive work.

For staff planning purposes, the time off equates to 20 hours per week (86.6 hours per month divided by 4.33 weeks per month). The time off should be addressed either by adding additional staff, arranging for substitutes, or developing contingency work plans to accommodate the staffing shortages.

Job Costing

Once you have totaled the annual time in hours needed to clean each area that you are workloading, you are ready to determine the job cost. The job cost includes labor costs, supervision costs, taxes, insurance, benefits, supply costs, equipment depreciation, miscellaneous job costs (background checks, drug testing, mobile phones, uniforms, etc.), sales and marketing, overhead, administration, and profit.

Labor Cost

Payroll

Having determined the number of labor hours needed, the next step is to determine your labor cost. For each wage classification or position, multiply the total number of hours by the wage rate. It is helpful to use a table similar to Table 11.

Table 11: Labor Cost Summary Table

Labor Classification	Total Hours per Week	Total Hours per Month (hours per week times 4.33)	Wage Rate Per Hour	Total Monthly Wages (Wage Rate times Total Hours per Month)
Manager/Supervisor	20	86.60	\$10.00	\$866.00
Cleaning Labor-2 nd Shift	72	311.76	\$8.00	\$2,494.08
Totals				\$3,360.08

Labor Burden

Once you know the payroll cost, you will need to add a labor burden. The labor burden is a percentage that is added to the labor cost. It includes payroll-related costs such as FICA, Federal Unemployment Tax Act (FUTA), State Unemployment Tax (SUTA), workers' compensation, general liability insurance, bonding, vacation pay, union benefits, healthcare, other paid time off, and any miscellaneous labor-related benefits.

The most efficient way to account for these costs is to figure out the average cost based upon a percent of payroll and then sum them up. Table 12 provides a sample calculation. Note that your actual costs may vary, and you may need to add or remove items.

Table 12: Labor Burden

	% of Payroll
FICA	6.20
Medicare	1.45
FUTA	.80
SUTA or SUI	4.10
Workers' Compensation	8.00
General Liability	1.20
Vacation	3.0
Total Labor Burden %	24.75

For the above example the labor burden is 24.75% of the payroll, or \$831.62 per month (.2475 times \$3,360.08). Note that labor burdens may differ based upon the employee classification because insurance rates and benefits vary. In that case you would simply calculate and apply the labor burden separately for each labor classification.

Supply and Equipment Costs

Chemical and Supply Cost

There are two methods that can be used to calculate the cost of the chemicals and supplies used in performance of the cleaning function.

Actual Cost

If accurate chemical and supply cost information is available for the building, it should be used. This approach is most practical for in-house cleaning operations and incumbent contractors rebidding an existing contract.

Percentage of Labor

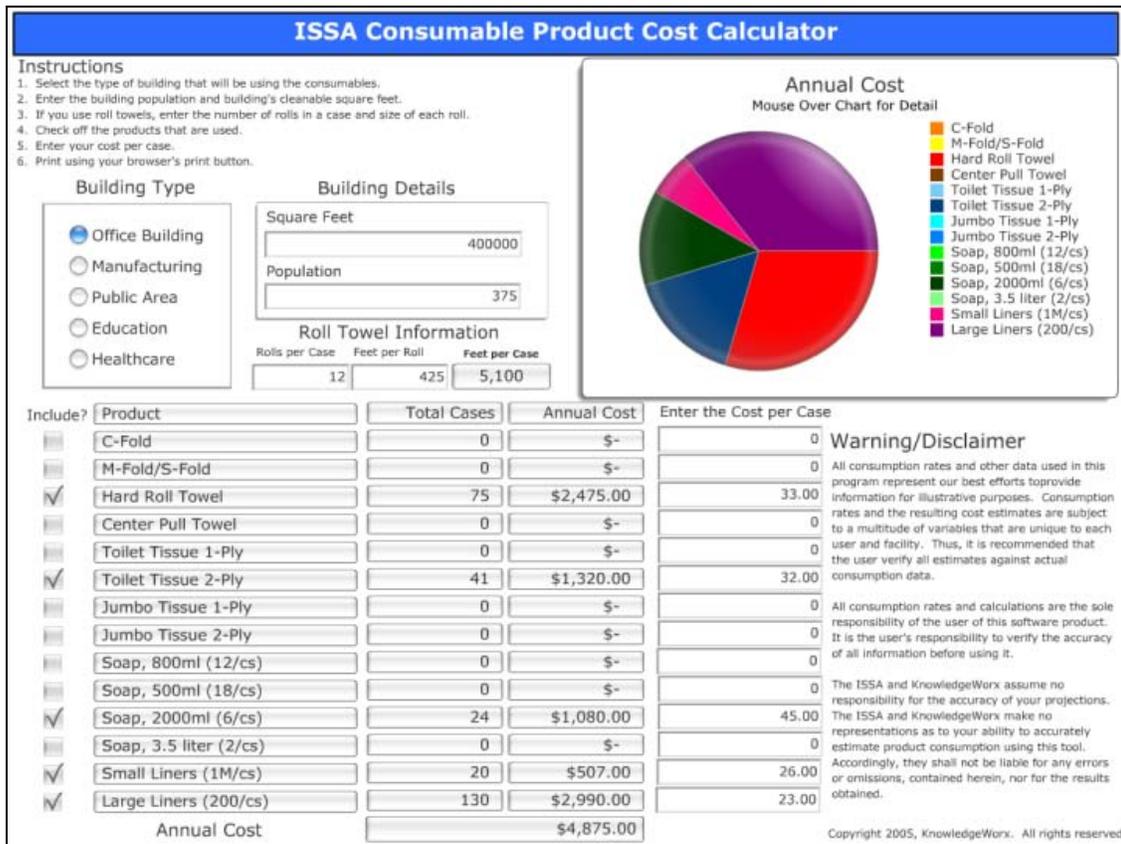
Chemicals and supply costs can be based on your organization's historical costs in relation to labor costs. Obtain your expenditures for a given period and divide them by your direct labor costs for that period. For example, if your chemical and supply costs for the last twelve months were \$5,000 and your labor costs were \$100,000 for that period, then your supplies average 5% of payroll.

Paper and Consumable Estimates

Consumable products, also known as expendable supplies, are products whose usage varies with building population such as hand towels, toilet tissue, seat covers, hand soap, feminine products, and trash liners. They are handled one of three ways:

1. Provided by the building owner.
2. Contractor purchases the product, adds handling fee to the cost, and invoices the customer based on actual usage.
3. Contractor is required to include them in the service price. As with chemical costs, if accurate purchase history information is available, it should be used. In the absence of historical data, usage estimates can either be based on consumption patterns in other similar buildings and/or estimating software such as ISSA's on-line Consumable Product Cost Calculator (Figure 9). Visit www.issa.com to view the calculator.

Figure 9: ISSA Consumable Product Cost Calculator



Equipment Costs

The cost of larger equipment is typically depreciated over the equipment's life. To determine the monthly amount of depreciation, divide the equipment's cost by the number of months over which the equipment will be depreciated. Table 13 provides a sample depreciation schedule.

Table 13: Depreciation Schedule Example

Item Description	Price each	QTY	Extended Cost	Depreciation # of Months	Depreciation Cost/Month
26" Walk Behind Disk Scrubber with Pad Holders	\$ 4,095.00	1	\$ 4,095.00	48	\$ 85.31
Wet/Dry Vac 15 Gallon	\$ 398.09	2	\$ 796.18	24	\$ 33.17
20" Low Speed Floor Machine w/Pad Holder	\$ 452.00	2	\$ 904.00	36	\$ 25.11
Backpack Vacuum	\$ 344.00	6	\$ 2,064.00	24	\$ 86.00
Total Depreciation Per Month					\$ 229.60

Note that the depreciation schedule used in costing jobs may not necessarily be the same as the depreciation schedule used by the organization's accountant since job costing is frequently centered on obtaining business rather than meeting accounting requirements. You should also include maintenance, parts, and repairs.

Direct Job Costs

These expenses are directly related to the job. They are required to perform the services. The costs should be based on estimates that account for the number of employees on the job site.

Recruiting

Includes help wanted ads, referral incentives, and interview expenses.

Background Checks

Drug and Alcohol Screening

Uniforms and Laundry

Cost to provide the employees with uniforms.

Badges

Vehicle Expenses

The operating cost of any vehicles, such as automobiles or carts, used on the job site. It should include fuel, gas, maintenance, repair, and depreciation.

Subcontractor Expense

The cost of any subcontractors that will be used.

Telephones

Computer Expense

Health and Welfare for Supervisors

Cost of healthcare, 401(k), dental, or other benefits provided to the site management (if not included as part of labor burden).

Training

Cost of specialized training.

Travel and Lodging Expense

For locations not in proximity to an office, estimate cost of travel, lodging, and meals needed during the job start up or to support the job site.

Indirect Costs

Some expenses are needed to operate your business but are not directly traceable to the delivery of service. To determine your percentage, obtain the expenditures of support items such as those listed below from your most recent financial statements.

- Administration
- Office Expense
- Facility
- Sales & Marketing
- Supervision

Divide your total indirect expenses by your total direct expenses. The results will be your indirect expense percentage.

Profit

Profit is ordinarily calculated as a percentage of cost. A number of factors are usually considered, including the size of the job, competitive conditions, type of account, customer expectations, and how “manageable” the account is likely to be. There is no standard profit margin or markup for the industry.

Using Software to Simplify the Process

Manual workloading is tedious, time consuming, and prone to error. In addition, it is difficult to edit work. The most efficient way to analyze your staffing needs and workload is to use industry-specific software. Software designed specifically for the cleaning industry is widely available from a large number of vendors at a price to fit any budget.

Available Software from Triple S

Achieve Workloading Assistant and Equipment ROI Calculator

Triple S Achieve Workloading Assistant is an intuitive and powerful workloading tool that enables facility professionals to quickly, easily, and accurately determine the number of staff and budget needed to maintain a facility. Use the Equipment Return on Investment Calculator when you want to show an end-use customer the financial return on investment when considering new equipment to replace manual labor.

Achieve Workloading Professional Software

Designed for large and multi-building and multi-site facilities and contractors where more advanced features are needed. Achieve Professional provides an easy method of determining custodial staffing requirements based your choice of nationally recognized standards (APPA, ISSA). Modules include: Space Management, Area Types & Tasks, Labor Estimates, Work Assignments, Inspections (Mobile Inspection Software), Supplies and Equipment. Other features include the ability to track personnel history, tracking equipment history and maintenance, the 5 levels of cleanliness analysis (APPA) and more.

Achieve Workloading and CIMS

The Cleaning Industry Management Standard (CIMS™) requires that an organization:

1. Use an industry-accepted methodology for determining the number of labor hours needed to accomplish work requirements as specified in the scope of work or performance outcomes and,
2. Have a system for estimating job costs that considers the following factors: cost of labor, materials, overhead, profit (if applicable), taxes, insurance, and miscellaneous costs.

These requirements are satisfied by consistent application of the techniques and processes set forth in this publication.

Glossary

APPA

Association of Higher Education Facilities Officers: www.appa.org

Area

As used in building area measurement, the quantitative measure of a horizontal, two-dimensional plane expressed in Square Feet or Square Meters.

Blueprints

Plans drawn to scale, used by builders, plumbing, electrical, and other subcontractors in construction. Blueprints include floor plans, elevations, a site plan, foundation plan and wall sections, plumbing, electrical and mechanical plans, and construction details.

BOMA

The Building Owners and Managers Association: www.boma.org.

BSCAI

The Building Service Contractors Association International: www.bscai.org

CAD - Computer-Aided Design

Computer-aided design (CAD) is the use of computer technology to aid in the design and especially the drafting (technical drawing and engineering drawing) of a part or product, including entire buildings (Wikipedia contributors, 2008).

Cleanable Area (Cleanable Sq. Ft.)

The surface areas of floors, restrooms, carpets, lobbies, and other areas in the facility that require cleaning in order to maintain sanitary conditions and a defined appearance level.

Cleaning Time

Time it takes for a worker to perform a specified task. In facility maintenance, times will vary based on a multitude of variables that include mechanization, worker speed, and accessibility.

Density

A measurement for office space utilization measured in square feet per person. The measure of square footage is usually Usable Square Feet.

Digital Take-off Tool

Digital take-off tools are ingenious portable devices that rapidly and accurately determine area from drawings of any scale and in any common unit of measure.

Employee Benefits

An indirect form of employee compensation, in addition to wages. Some employee benefits are mandated by law. These include social security, unemployment, and workers' compensation. Other employee benefits are sponsored voluntarily by employers.

FICA

Social Security payroll taxes are collected under authority of the Federal Insurance Contributions Act (FICA). The payroll taxes are sometimes even called "FICA taxes."

Fixture

Used in the minute-per-fixture method of estimating restroom cleaning time. Each toilet, urinal, or sink is considered one fixture. Shower stalls are counted as two fixtures.

Floor Area, Gross

Section 1002.1 of the International Building Code defines this term as "the floor area within the inside perimeter of the exterior walls of the building under consideration, exclusive of vent shafts and courts, without deduction for corridors, stairways, closets, the thickness of interior walls, columns or other features. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above. The gross floor area shall not include shafts with no openings or interior courts."

Floor Area, Net

A term used in building codes to describe the actual occupied area of a floor, not including accessory unoccupied areas (stairs, elevator & HVAC shafts, mechanical rooms, etc.) or the thickness of walls. It is often referred to as cleanable area or cleanable sq. ft.

Frequency

Frequency is the measurement of the number of times that a repeated cleaning event occurs per day, week, month, or year.

Full-Time Employee - FTE

Full-Time Equivalent (FTE) is the percentage of time that an employee works represented as a decimal. A full-time person is 1.00, a half-time person is .50 and a quarter-time person is .25.

FUTA

Federal Unemployment Tax Act, or "F.U.T.A.," is the term used for the payroll tax every employer must pay under this Act. This tax cannot be withheld from the employee's pay; it is solely the responsibility of the employer.

General Labor and Industrial Staffing

General Labor and Industrial Staffing typically include the following positions, among others: manual laborers, construction workers, food handlers, cleaners, assemblers, drivers, tradesmen, machine operators, and maintenance workers.

GWCAR

The Greater Washington Commercial Association of Realtors: www.gwcar.org

Gross Margin

Shows what a company is earning after costs (for products and/or services). It is a basic measurement of a company's profitability. Formula: Revenue percentage = (revenue – cost of goods or services) ÷ by revenue. Revenue percentage x 100 = gross margin.

IFMA

The International Facility Management Association: www.ifma.org

ISSA

The World Cleaning Association: www.issa.com

Job Costing

The allocation of all time, material, and expenses to an individual project or job; specifically, job costing is normally software-based and provides for budgeting, forecasting, collecting and reporting on the expenditure and revenue associated with specific projects or jobs.

Markup

The difference between cost and selling price. Markup is expressed as a percentage of cost or in dollars. For example, if the cost to deliver a service is \$200 and there is a profit markup on cost of 30%, the selling price will be \$260 ($\$200 + \60).

Office Area

Enclosed space usable for personnel, furniture, equipment, and office support areas, which has suitable finishes, lighting, environmental controls, power, communications support, and ceiling heights.

Outsourcing

In basic outsourcing an organization has an entire department staffed by a management company or building service contractor. Some organizations may outsource select project tasks and maintain in-house staffs for daily cleaning operations.

Part-time Employee

A person employed to work fewer than the normally-scheduled daily or weekly hours of work established for a full-time employee of the same occupational level.

Payroll Taxes

Employers are appointed, as agents of the government, to withhold federal, state and local income tax from employees' wages. These obligations are severely regulated and carry heavy penalties if they are not done correctly.

Productivity

The amount of output per minutes or hours of work. There are many different ways of measuring productivity. For example, in a factory, productivity might be measured based on the number of hours it takes to produce a product, while in the cleaning industry, productivity might be measured based on the time (minutes or hours) generated by a worker to perform a cleaning task.

REBNY

The Real Estate Board of New York: www.rebny.com

Request for Proposal (RFP)

An invitation for suppliers, often through a bidding process, to submit a proposal on a specific commodity or service.

S.U.I.

State Unemployment Insurance. Each state imposes a payroll tax on the employer for unemployment benefits. The tax ranges from 1% to over 5% of each dollar of payroll. The employer is entirely responsible for paying the tax; it cannot be deducted from the employee's pay. Also known as S.U.T.A. (state unemployment tax assessment).

Scale

1. A graduated instrument that allows a measure to determine linear distances from paper floor plans that are drawn to scale for the purpose of calculating floor areas. Sometimes incorrectly referred to as a "ruler."
2. The ratio between a drawing of a floor and the size of the actual floor it represents. Most commercial buildings are drawn at a scale of $1/8" = 1'$, called "eighth scale."

Scope of Work

A statement outlining the specific services a facility service provider or building service contractor is expected to perform, generally indicating the type, level, and quality of service, as well as a schedule for completion. Also referred to as a Statement of Work.

Shop Drawings

Detailed, accurate drawings produced by individual trades from which a building is actually constructed. The most reliable source of dimensional information short of field dimensions.

SIOR

Society of Industrial and Office Realtors: www.sior.com

Specifications

A written part of the document that sets out requirements for supplies, cleaning frequencies, standards and quality services required to clean a building.

Square Foot

A square unit of area measuring twelve inches on each of its four sides (144 square inches). There is no universally accepted abbreviation although sq. ft., SF, and ft^2 are most common.

Task

Task is part of a set of actions which accomplish a job; the sense is that "useful work is getting done." Tasks, when combined, make it possible to achieve the intended result of the activity.

Task Analysis

The analysis or breakdown of exactly how a task is accomplished, such as what sub-tasks are required. This information can then be used for many purposes, such as improving the design of tools or procedures that aid in performing the task. These tools can be either physical implements or software.

Tenant Area

Space that is used exclusively by a tenant for their personnel, furniture, equipment, storage, support, and processes of any sort. May be applied to any type of occupancy (office, industrial retail, etc.) and so can be measured many different ways.

Unemployment Insurance

Government-sponsored protection to assist workers who have been laid off or even quit their jobs through no fault of their own. The unemployment income lasts only a few months. This insurance represents a significant contribution on the part of an employer as a percentage of employees' gross wages.

Usable Area

Fully enclosed space that is available for the exclusive use of a building occupant for occupants' personnel, materials, furniture, fixtures, and equipment. Different standards measure this in different ways.

W-2 vs. 1099 MISC

At the end of each year, workers either receive a Form W-2 or a Form 1099 MISC. An employee receives a W-2 and has all required payroll taxes withheld throughout the year. An independent contractor receives a 1099 and has no payroll taxes withheld.

Workers' Compensation

Businesses are required by law to obtain workers' compensation insurance for their employees. The purpose of this insurance is to provide medical and other benefit coverage for employees who suffer a job-related injury or illness. Generally speaking, the staffing firm must maintain workers' compensation for their employees or coordinate coverage through the subscriber.

Working Drawings

Graphic depictions of a building on paper or CAD, prepared as the basis for a construction contract. They include floor plans at multiple scales, building and wall sections, details and schedules, as well as architectural, structural, mechanical and electrical drawings. They do not reflect changes made during construction unless stamped "As-built" or "Record Drawings." Sometimes referred to as Construction Drawings.

Workloading

Workloading is simply the process of determining how many employees will be needed to complete a scope of work. Once the number of employees is established, the daily and periodic tasks can be assigned.

Appendix B: Time Equivalents in Worker Hours

Use this table to quickly convert minutes to their decimal equivalent

Minutes	Worker Hours
1	0.0167
2	0.0333
3	0.0500
4	0.0667
5	0.0833
6	0.1000
7	0.1167
8	0.1333
9	0.1500
10	0.1667
11	0.1833
12	0.2000
13	0.2167
14	0.2333
15	0.2500
16	0.2667
17	0.2833
18	0.3000
19	0.3167
20	0.3333
21	0.3500
22	0.3667
23	0.3833
24	0.4000
25	0.4167
26	0.4333
27	0.4500
28	0.4667
29	0.4833
30	0.5000

Minutes	Worker Hours
31	0.5167
32	0.5333
33	0.5500
34	0.5667
35	0.5833
36	0.6000
37	0.6167
38	0.6333
39	0.6500
40	0.6667
41	0.6833
42	0.7000
43	0.7167
44	0.7333
45	0.7500
46	0.7667
47	0.7833
48	0.8000
49	0.8167
50	0.8333
51	0.8500
52	0.8667
53	0.8833
54	0.9000
55	0.9167
56	0.9333
57	0.9500
58	0.9667
59	0.9833
60	1.0000

Appendix C: Workloading Example

This example is for Pinnacle Office Building, a hypothetical office building. It begins with a scope of work, proceeds through job costing worksheets, and concludes with a pricing work sheet.

Scope of Work

Frequency Chart

Examples of Frequency Required	Annual Frequency
Five day service (daily)	260
Two times per week service	104
Weekly service	52
Monthly service	12
Quarterly service	4
Twice yearly	2
Yearly service	1

Area Classification, Cleaning Tasks, & Frequencies

Lobby/Reception Area	Frequency
Remove all trash and replace soiled can liners as needed	260
Dust mop with 48" mop using dust mop treatment	260
Dust all horizontal surfaces below 60" with duster	104
Damp mop with 24 oz. mop head using single bucket and wringer	52
Scrub porcelain tile	12

Office Areas	Frequency
Remove all trash and replace soiled can liners	260
Vacuum carpeting using backpack vacuum with 14" tool	260
Dust all horizontal surfaces below 60" with duster	52
Remove spots on carpets	260
Spot wash walls, light switches, doors, etc.	260
Extraction clean all carpeting	4

Restrooms	Frequency
Dust mop	260
Dust all horizontal surfaces below 60" with duster	260
Clean and disinfect all toilets, urinals and sinks to include all hardware	260
Fill all soap, lotion, paper, cup and feminine hygiene dispensers	260
Spot clean with disinfectant all doors, walls, dispenser covers, trash receptacles and light switches	260
Wipe mirrors	260
Damp mop using disinfectant, 40mm flat mop head, divided bucket and side press wringer	260
Scrub ceramic tile floors	12

Corridors	Frequency
Dust mop with 48" mop using dust mop treatment	260
Damp mop	260
Burnish with 2000 RPM 20" electric floor machine	52
Scrub and recoat	3
Strip with 175 RPM rotary floor machine	1
Apply 2 coats seal and 3 coats finish after stripping	1

Job Worksheets

Instructions:

1. For each task, determine the cleanable area or the number of units and enter it in the appropriate space.
2. For each task, calculate the number of hours needed per year.
3. Total all of the tasks for the area.
4. Enter the total on the Staffing Hours Summary.

Lobby/Reception Area	Cleaning Frequency	Cleanable Area or Units	Productivity Rate	Task Time (Area sq. ft./Rate)	Annual Time in Hours Task Time*Frequency
Remove all trash and replace soiled can liners	260	1,500	30,000.00	$1,500 \div 30,000 = .05$	$.05 \times 260 = 13.0$
Dust mop with 48" mop using dust mop treatment	260	1,500	25,000.00	0.06	15.6
Dust all horizontal surfaces below 60" with duster	104	1,500	10,000.00	0.15	15.6
Damp mop with 24 oz. mop head using single bucket and wringer	52	1,500	5,000.00	0.30	15.6
Scrub porcelain tile	12	1,500	1,800.00	0.83	10.0
Total Hours per Year					69.8

Office Areas	Cleaning Frequency	Cleanable Area or Units	Productivity Rate	Task Time (Area sq. ft./Rate)	Annual Time in Hours Task Time*Frequency
Remove all trash and replace soiled can liners	260	60,000	30,000	2.00	520.0
Vacuum carpeting using backpack vacuum with 14" tool	260	60,000	10,000	6.00	1,560.0
Dust all horizontal surfaces below 60" with duster	52	60,000	10,000	6.00	312.0
Remove spots on carpets	52	60,000	30,000	2.00	104.0
Spot wash walls, light switches, doors, etc.	104	60,000	15,000	4.00	416.0
Shampoo by extraction method all carpeting	4	60,000	2,000	30.00	120.0
Total Hours per Year					3,032.0

Restrooms	Cleaning Frequency	Area Sq. Ft. or Units	Productivity Rate	Task Time for Area Area Sq. Ft. ÷ Rate	Annual Time In Hours Task Time x Frequency
Remove all trash and replace soiled can liners	260	75 Fixtures	3.00	3.75	975.0
Dust mop	260				
Dust all horizontal surfaces below 60" with duster	260				
Clean and disinfect all toilets, urinals and sinks to include all hardware	260				
Fill all soap, lotion, paper, cup and feminine hygiene dispensers	260				
Spot clean with disinfectant all doors, walls, dispenser covers, trash receptacles and light switches	260				
Wipe mirrors	260				
Damp mop using disinfectant, 40 mm flat mop head, divided bucket and wringer	260				
Scrub ceramic tile floors	12	3600	1800	2.00	24.0
Total Hours per Year					999.0

Note: Remember that restrooms are different. The productivity rate for each fixture includes all of the tasks listed on the left to get the task time in minutes for the area,

Multiply the number of fixtures by the rate and divide by 60.

	3.00	3.75	975.0	

Corridors	Cleaning Frequency	Area Sq. Ft. or Units	Productivity Rate	Task Time for Area Area Sq. Ft. ÷ Rate	Annual Time In Hours Task Time x Frequency
Dust mop with 48" mop using dust mop treatment	260	9,000	30,000	0.30	78.0
Damp mop	260	9,000	5,000	1.80	468.0
Burnish with 2000 RPM 20" electric burnisher	52	9,000	10,000	0.90	46.8
Scrub and recoat (two coats of finish)	3	9,000	750	12.00	36.0
Strip with 175 RPM rotary floor machine	1	9,000	450	20.00	20.0
Apply 2 coats seal and 3 coats finish after stripping	1	9,000	1,500	6.00	6.0
Total Hours per Year					654.8

Staffing Hours Summary Worksheet

Area	Total Annual Hours
Lobby/Reception	69.8
Offices	3,032.0
Restrooms	999.0
Corridors	654.8
	4,755.60

1. Allocate the total hours among a lead worker, full-time and part-time employees

Position	Hours	Number of Employees
Supervisor	2080	1
Full Time	0	0
Part Time	2675.60	2

2. Enter the totals on the Cost Summary Sheet

Cost Summary Sheet

Instructions:

1. Enter the total labor hours per year from the *Staffing Hours Summary Worksheet*.
2. Calculate the total hours per month by dividing the total hours for each position by 12.
3. Complete the remainder of this Cost Summary Sheet

	Total Hours per Year (from the staffing hours summary sheet)	Total Hours per Month (Total ÷ 12)	Pay Rate Per Hour	Monthly Total (Hours per Month x 12)
Supervisor	2080	173.33	\$10.00	\$1,733.30
Cleaning Labor	2676	223.00	\$8.00	\$1,784.00

1. Total Monthly Labor Cost	<u>\$3,517.30</u>
2. Labor Burden Per Month in Dollars (Multiply line 1 by .24, which reflects the costs below)	<u>844.15</u>
Includes all labor-related costs such as Workers' Compensation, FICA, FUTA, SUTA, Liability Insurance, Vacation Pay, Sick Pay, Employee Incentives, Miscellaneous Employee Benefits, etc.	
Labor Burden as Percentage of Labor	<u>24%</u>
3. Total Burdened Labor Cost (add lines 1 and 2 together)	<u>4,361.45</u>
4. Cleaning Chemicals and Supplies per Month (5% of line 3)	<u>218.07</u>
Includes the cost of all chemicals and expendable supplies. Based on companywide average.	
5. Cleaning Tools and Equipment per Month	<u>350.00</u>
Includes maintenance equipment, parts, repairs, and depreciation. Depreciation schedule was prepared and indicated 350.00 per month.	
6. Monthly Miscellaneous Costs	<u>120.00</u>
Includes uniforms, background checks, and drug testing.	
7. Administrative Overhead per Month (Pick any amount that you think makes sense)	<u>700.00</u>
Includes profit and costs such as bonds, bookkeeping, I.D. cards, training, recruiting of personnel, cell phones, transportation, relief of absenteeism, vacations, and other direct and indirect costs.	
8. Profit per Month	<u>1,150.00</u>
Total Monthly Price (Sum of Items 3 through 8)	<u>6,899.52</u>

Bibliography

APPA: The Association of Higher Education Officers. (1998). *Custodial Staffing Guidelines*. Alexandria: APPA: The Association of Higher Education Officers.

Building Owners and Managers Association International. (2008, July 30). *Building Class Definitions*. Retrieved July 30, 2008, from Building Owners and Managers Association International: <http://www.boma.org/Research/classifications.htm>

Building Owners and Managers Association International. (1997). *Cleaning Makes Cents*. Washington, D.C.: Building Owners and Managers Association International (BOMA).

FMLink Group, LLC. (2008, August 1). *FM Link: Facilities Management Resources Benchmarking*. Retrieved August 1, 2008, from FMLink: <http://www.fmlink.com/ProfResources/Benchmarking/article.cgi?Facility%20Issues:0205.htm>

ISSA. (2003). *The Official ISSA 447 Cleaning Times*. Lincolnwood, IL, USA: ISSA.

Wikipedia contributors. (2008, August 2). *Computer-aided design*. Retrieved August 2, 2008, from Wikipedia, The Free Encyclopedia: http://en.wikipedia.org/w/index.php?title=Computer-aided_design&oldid=229355118

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